N.S.W. DEPARTMENT OF AGRICULTURE.

BIOLOGICAL BRANCH - DIVISION OF SCIENCE SERVICES.

P L A N T D I S E A S E S U R V E Y

for the

TWELVE MONTHS ENDING 30TH JUNE, 1949.

NINETEENTH ANNUAL REPORT.

Notes compiled by officers of the Plant Pathological Section of the Biological Branch, New South Wales Department of Agriculture, Sydney, Australia.

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COMMONWEALTH MYCOLOGICAL INSTITUTE 26 APR. 1950

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N.S.W. DEPARTMENT OF AGRICULTURE.

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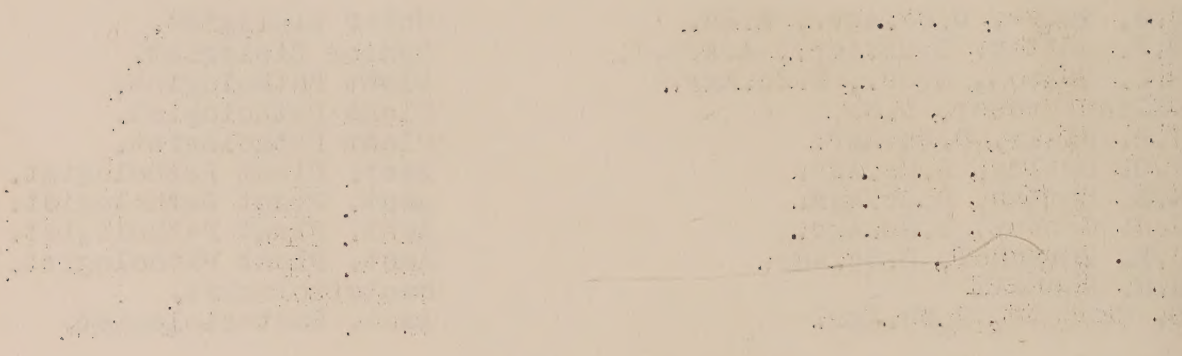

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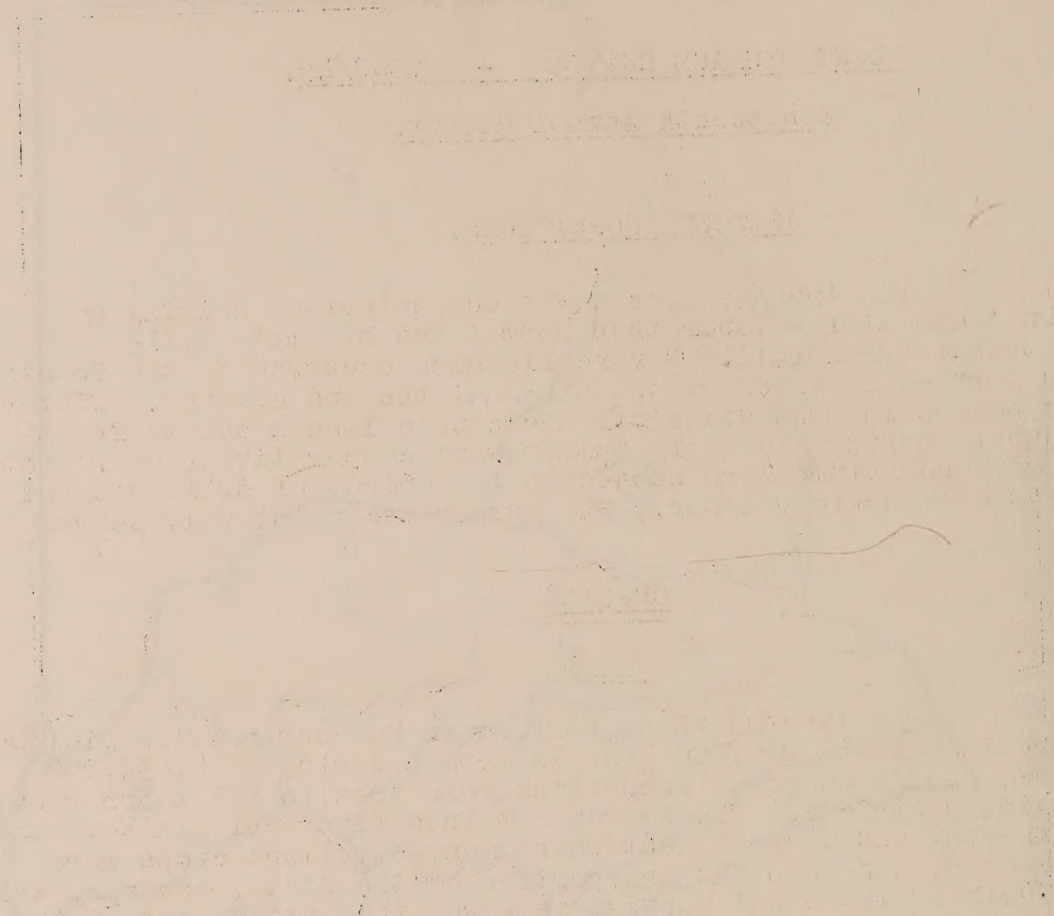
DISTRICTS OF NEW SOUTH WALES.

KEY

1. North Coast (N.C.)
2. Central Coast (C.C.)
3. Metropolitan Area (M.A.)
4. South Coast (S.C.)
5. Northern Tableland (N.T.)
6. Central Tableland (C.T.)
7. Southern Tableland (S.T.)
8. North Western Slope (N.W.S.)
9. Central Western Slope (C.W.S.)
10. South Western Slope (S.W.S.)
11. North Western Plain (N.W.P.)
12. Central Western Plain (C.W.P.)
13. Riverina (R.)
14. Western Division (W.D.)
15. Murrumbidgee Irrigation Areas (M.I.A.)



DEPARTMENT OF AGRICULTURE.

NEW SOUTH WALES.

BIOLOGICAL BRANCH - DIVISION OF SCIENCE SERVICES.

PLANT DISEASE SURVEY - 1948/49.

Nineteenth Annual Report.

WEATHER CONDITIONS.

The 1948/49 season was characterised chiefly by mean temperatures lower than normal and by ample well-distributed rainfall. Severe flooding occurred in the Coastal and North-West areas of the State at the end of June. Winter was severe in most districts and caused losses due to frost injury. Spring and Early Summer were comparatively dry. Late Summer and Autumn were subjected to periods of dull, wet and frequently humid weather. The Summer was relatively short.

CEREALS.

WHEAT.

The 1948/49 wheat harvest in New South Wales yielded approximately 65,000,000 bushels from a sowing of 4,038,000 acres. Early seasonal conditions were good in all major wheat-growing districts. The season remained favourable in both the North-West and Central West where many excellent crops were harvested. In the Southern portion of the State, however, where the bulk of the wheat acreage is sown, the latter part of the season was unfavourable the yields were poor to moderate.

FROST INJURY, as in 1946/47, caused more serious damage to wheat crops during the season than did any diseases of fungal or bacterial origin. Heavy losses occurred in many crops in all sections of the wheat belt. In the Gunnedah (N.W.S.) district, the most severe winter on record caused heavy basal stem and tip frosting with estimated losses of up to 40% in individual crops. Widespread, but less severe losses, were experienced elsewhere in the North-West, particularly in the Tamworth (N.W.S.), Boggabri (N.W.P.) and Narrabri (N.W.P.) districts. In the Central West, losses between 5% and 20% were common, with occasional crops showing as high as 40% loss. Damage was mainly confined to the basal stem regions and resulted in considerable "haying off" and lodging. Fortunately, a very mild Spring and early Summer enabled many affected crops to fill grain remarkably well. The variety, Charter, again proved extremely susceptible to tip frosting. In the southern portion of the wheat belt severe tip frosting occurred but little stem frosting was evident. Up to 50% of the heads of many crops in the Wagga (S.W.S.) district were affected.

STEM RUST (*Puccinia graminis tritici*) did not develop to any serious extent and only slight to moderate infection was observed in the North-West and Central West except in occasional late maturing crops, some of which showed moderately severe infection. Reports of slight infection were received from the southern wheat belt, mainly in irrigated crops on the Murrumbidgee Irrigation Areas and in South-Western Riverina.

As a result of the serious Stem Rust epidemic season of 1947/48, which resulted in an estimated loss of over 10,000,000 bushels, the acreage sown to rust-resistant varieties showed a marked increase. In 1947/48 approximately 10% of the 5,043,000 acres sown for grain was occupied by rust-resistant varieties. This season they represented an estimated 30-35% of the total grain area of 4,038,000 acres.

LEAF SPOT or WINTER BLIGHT (Septoria tritici) occurred extensively early in the season in southern and western districts. However, subsequent conditions did not favour its development and it was not responsible for any serious losses. One case of severe infection was reported from Yanco on the variety, Winter Minflor, grown under irrigation. The disease was observed for the first time in three seasons at Glen Innes (N.T.), also on Winter Minflor.

FLAG SMUT (Urocystis tritici) was observed in the field at Boggabri (N.W.P.), Tamworth (N.W.S.) and Quandialla (S.W.S.). Of the five infected crops observed in these localities, only one showed more than slight infection. This was an early-sown crop of the variety Gabo showing 80% infection. It was grown on land reported to have carried a slightly infected crop of Gular the previous season. The yield reduction was estimated at 30-40%. This represents the first serious field outbreak of Flag Smut for several seasons.

BUNT (Tilletia caries and T. foetida) was observed in all sections of the wheat belt. Infection, for the most part, was slight, although occasional crops on the south-western slopes showed as high as 5% bunted heads. A small area of the variety, Rymer, at Temora (S.W.S.) showed 35% infection.

During the last three seasons the incidence of Bunt, generally, has shown a steady decline.

TAKE-ALL (Ophiobolus graminis), although not as prevalent as usual, again proved to be the most common of the root and foot rot diseases. It was reported from all sections of the wheat belt but no serious losses occurred.

FOOT ROT (Helminthosporium sativum and Fusarium culmorum associated) was more than usually severe in the North-West, but of little consequence elsewhere. Losses of between 5% and 50% were common in late-sown crops on heavy black soil in the Gunnedah (N.W.S.) district. Crops on land which previously carried Barley Grass (Hordeum leporinum) or had been successively cropped to wheat, were most commonly affected. In the majority of instances, affected crops showed prior evidence of basal stem frosting.

PURPLE PATCH (Rhizoctonia solani). A report of this disease was received from the North Western Slopes, where it was said to be relatively widespread, particularly in the Graman district.

DOWNY MILDEW (Sclerospora macrospora) was reported from Leeton (M.I.A.) and Curlewis (N.W.S.). Infection in both instances was slight.

LOOSE SMUT (Ustilago tritici) occurred widely throughout the State but infection in all instances was slight. The most commonly infected varieties were Rance, Baringa, Yalta, Rapier and Javelin.

LEAF RUST (Puccinia triticina) was observed in all sections of the wheat belt. Infection ranged from trace to moderate but the disease was of no economic significance, even in the most heavily infected crops which occurred in the North-West. Of the commercially-grown varieties, Fedweb and Gabo showed heaviest infection, whilst Charter proved the most resistant under field conditions.

BLACK POINT (Helminthosporium and Alternaria spp. associated) was reported from Henty (R.) where a crop of the variety, Quadrat, showed a moderate degree of infection.

BLACK CHAFF (Xanthomonas translucens var. undulosa) was observed on several Hope hybrids at the New England Experiment Farm, Glen Innes (N.T.). Infection was slight in all instances.

FALSE BLACK CHAFF (non-parasitic) was observed on the variety Kendee in several crops in the North-West, and on many Hope hybrids at the New England Experiment Farm, Glen Innes (N.T.)

OATS.

FROST INJURY, as with wheat, caused more substantial losses than did any parasitic diseases. Damage was reported from almost all oat-growing districts but losses were not serious except in occasional early-sown crops of Algerian and Fulghum in the South-West of the State.

STEM RUST (Puccinia graminis avenae) did not develop to any extent during 1948/49. Moderate infection was observed in the plant breeding plots at New England Experiment Farm, Glen Innes (N.T.) and on some Coastal grown crops.

CROWN RUST (Puccinia coronata) again occurred extensively but was not serious, except in occasional crops on the Central Coast. Slight to moderate infection was observed on the Northern Tablelands and in fodder crops on the North Coast.

LOOSE SMUT (Ustilago avenae) occurred throughout the State. Infection generally was slight, although a crop of the variety, White Tartarian, at Glen Innes (N.T.) showed 50% infection and a crop of Fulghum at Narrabri (N.W.P.) contained between 40-50% smutted heads. Some COVERED SMUT occurred in both these crops.

COVERED SMUT (Ustilago kolleri) occurred to an even lesser extent than LOOSE SMUT. No heavily infected crops were observed.

BACTERIAL STRIPE (Pseudomonas striafaciens) was observed in several varieties at Temora and Wagga (S.W.S.). Infection was not heavy at either centre.

HALO BLIGHT (Pseudomonas coronafaciens) was observed to a slight extent in two unnamed hybrids at the Wagga Agricultural College and Experiment Station (S.W.S.)

SPECKLED BLOTCH (Leptosphaeria avenaria = Septoria avenae) occurred to a slight extent only in the Southern and Central Western districts of the State.

LEAF SPOT (Helminthosporium avenae) was observed throughout the State. It was most common in the Southern districts where the degree of infection ranged from slight to moderate.

BARLEY.

SCALD (Rhyncosporium secalis) was the most commonly observed disease on barley, particularly in Southern N.S.W. It developed to a severe extent, following cool, showery weather early in the season, on the varieties Prior and Trabut. Spring conditions, however, did not favour its later development and losses were much lower than originally anticipated.

COVERED SMUT (Ustilago hordei) was reported over a wide area of the State but no heavy lossess occurred. Several seed samples from the Northern Tablelands were found to be moderately infected.

STEM RUST (Puccinia graminis tritici) was observed on the Coast and the Northern Tablelands but in all cases infection was slight to moderate and no serious losses resulted.

LEAF RUST (Puccinia anomala = P. hordei) was not troublesome except in some crops on the Central Coast, which showed moderately heavy infection.

POWDERY MILDEW (Erysiphe graminis hordei) developed to a minor extent on some Coastal grown crops.

RYE.

LEAF RUST (Puccinia dispersa) occurred to a slight extent on the Central Coast.

BROOM MILLET.

No records.

JAPANESE MILLET.

SMUT (Cintractia crus-galli) was observed in several samples forwarded from the North Coast. Infection in all samples was slight.

GRAIN SORGHUM.

STALK ROT (Fusarium moniliforme) caused considerable loss in a crop of the variety, Planisman, at Mudgee (C.T.)

KERNEL SMUT (Sphacelotheca sorghi) was reported from several localities in North-Western N.S.W. Infection, in all instances was light.

MAIZE.

Conditions generally were satisfactory early in the season but dry weather in late Spring and early Summer retarded crop growth. Subsequently, heavy rain in January and February, followed by mild to warm conditions, greatly benefited crops, and the indications are that a yield in the vicinity of

2,700,000 bushels will be obtained. This represents a better than average yield on an acreage basis and exceeds the total production for 1947/48 by over 300,000 bushels.

ROOT and BASAL STALK ROT (Gibberella moniliformis, G. saubinetii and G. fujikuroi var. subglutinans) was reported from all maize-growing districts. No serious losses in field crops occurred, however, and the general incidence of the disease was lower than in the previous season. An experimental plot of hybrid lines at the New England Experiment Farm, Glen Innes, was very heavily infected.

LEAF BLIGHT (Helminthosporium turcicum) was observed throughout the Coastal belt but infection was lighter than usual, particularly on the far North Coast. Heavy infection was reported in some crops on the Hastings and Manning Rivers (C.C.)

COB AND GRAIN ROTS (Gibberella saubinetii, G. moniliformis and G. fujikuroi var. subglutinans) were a serious source of loss on the North Coast, and to a lesser extent in other maize-growing areas. Their development was favoured by bird and insect damage to cobs and a period of wet, humid weather late in the summer. Open-husked varieties proved very susceptible.

DRY ROT (Diplodia zeae) occurred to a minor extent only in most maize-growing districts. On the North Coast and Tablelands, however, occasional crops showed moderate to severe infection.

RUST (Puccinia sorghi), although widespread in occurrence, was not responsible for any serious losses. The degree of infection in most maize-growing areas varied from a trace to moderate. The aecidial stage of Puccinia sorghi was observed on yellow wood sorrel (Oxalis corniculata) at Bega (S.C.) and Grafton (N.C.)

SEEDLING BLIGHT (Gibberella saubinetii) occurred in a number of crops on the Central and North Coasts and the Northern Tablelands. No serious field losses were reported, although a 10% reduction in seedling stand was observed in experimental plots at the New England Experiment Farm, Glen Innes (N.T.)

CROWN CRACK (non-parasitic) was observed in a number of crops on the Northern Tablelands. The percentage of grains affected was slight in all instances.

RICE.

The 1948/49 rice crop of approximately 33,000 acres experienced very variable conditions from the time of sowing and was adversely affected by the abnormally cool summer. No diseases of a parasitic nature were reported.

BROWN GLUME STAIN (non-parasitic) again occurred extensively following cold conditions at anthesis, but did not appear to affect yields.

SUGAR CANE.

Information supplied by the Colonial Sugar Refining Co. Ltd. shows that during the 1948/49 season 274,337 tons of sugar cane were crushed.

Losses due to disease were estimated as follows:-

FIJI DISEASE (Virus)	... ...	577 tons
MOSAIC (Virus)	... ...	76 "
RED STRIPE (Xanthomonas rubrilineans)		35 "
		688 "

The estimated loss of 688 tons represents 0.25% of the total tonnage crushed.

Traces of diseases other than those for which tonnage losses have been recorded were observed, but their effect on yield was negligible. The following information has been abstracted from the Colonial Sugar Refining Co.'s agricultural circulars for 1949. All areas mentioned are on the North Coast.

FIJI DISEASE (Virus), although still the most serious disease with which growers have to contend, continues to decline in importance. The losses this season totalled 577 tons as compared with 973 tons last year and 2,605 tons in 1946-47. The biggest single factor in reducing losses has been the increase in the acreage planted to resistant varieties. The disease is reported to be more troublesome in the Richmond and Clarence River areas than in the Tweed River area.

MOSAIC (Virus) caused some losses in the variety Akbar on the Clarence River, whilst considerable infection was observed in the varieties Trojan and 41 5N 3339 in the Tweed River area.

RED STRIPE (Xanthomonas rubrilineans). The losses from this disease showed a marked decline from 118 tons in 1947/48 to 35 tons this season. It was observed on the variety, Pollux, in the Clarence River area and, early in the season, was quite prevalent on the same variety in the Tweed River area. Subsequent losses in this area, however, were small.

RED ROT (Colletotrichum falcatum = Physalospora tucumanensis) caused minor losses in certain undisclosed areas.

LEAF SCALD (Bacterium albilineans). Minor outbreaks occurred on the variety Trojan in various parts of the Richmond River area. It was also observed on the variety Solon in the Tweed River district.

EYESPOT DISEASE (Helminthosporium sacchari) was observed on the leaves of mature cane during the Winter months. Some cases of severe infection in the variety Atlas occurred in the Clarence River district. Heaviest infection occurred in crops growing in rich sandy soils.

GUMMING DISEASE (Xanthomonas vasculorum) caused minor losses during the season. It occurred to a slight extent in the Richmond and Clarence River districts but was not observed in the mill supply area on the Tweed River.

SWEET CORN.

ROOT and BASAL STALK ROT (Gibberella saubinetii and G. fujikuroi var. subglutinans) was responsible for slight to moderate losses in the Metropolitan Area and on the Coast.

SEEDLING BLIGHT (Gibberella fujikuroi var. subglutinans) caused a 50% reduction in a seedling stand at Leeton (M.I.A.) No other serious losses were recorded.

LEAF BLIGHT (Helminthosporium turcicum) did not develop to any serious extent but was recorded from many localities in the Coastal and Metropolitan Areas. It was also reported from the Murrumbidgee Irrigation Areas.

ROOT ROT (Pythium sp.) was recorded on plants in the seedling stage from Yanco Experiment Farm (M.I.A.). This constitutes the first record of this disease on sweet corn in N.S.W.

RUST (Puccinia sorghi) was widespread but did not develop to any serious extent. It was observed on the North, Central and South Coasts, in the Metropolitan Area and on the Northern Tablelands. P.39, the female parent of the widely-grown canning variety, Golden Cross Bantam, was observed to be very susceptible to this disease.

MISCELLANEOUS GRASSES.

BARLEY GRASS (Hordeum leporinum).

LEAF SPOT (Helminthosporium sp.) again occurred extensively. Heavy infection was observed in the North-West and on the South-Western Slopes.

FOOT ROT (Helminthosporium sativum) occurred to a considerable extent on heavy, black country in the Gunnedah (N.W.S.) district.

BUNT (Tilletia hordei) was observed on the Central Western Slopes.

BENT GRASS (Agrostis spp.)

BROWN PATCH (Rhizoctonia solani) again occurred extensively, particularly in the Metropolitan Area and on the Central Tablelands.

DOLLAR SPOT (Sclerotinia homoeocarpa) was identified on Agrostis tenuis at Canberra (A.C.T.) This is the first authentic record of this disease in N.S.W.

FAIRY RING (undetermined) was reported in a Bent Grass green at Dorrigo (N.C.)

FROST INJURY was reported in a newly-established lawn at Mudgee (C.T.).

SLIME MOULD (Physarum sp.) developed extensively on a green at Epping (M.A.).

BUFFALO GRASS (Stenotaphrum secundatum).

LEAF SPOT (Piricularia sp.) developed extensively in the Metropolitan Area following damp, humid conditions during the Summer.

FAIRY RING (undetermined) was reported in a lawn at Dulwich Hill (M.A.).

CHEWING'S FESCUE (Festuca rubra var. fallax).

DOLLAR SPOT (Sclerotinia homoeocarpa) was recorded at Canberra (A.C.T.). This is the first record of this disease on Chewing's Fescue in N.S.W.

COCKSFOOT (Dactylis glomerata).

LEAF RUST (Uromyces dactylidis) was recorded from Grafton. This is the first authentic record of its occurrence in New South Wales.

COUCH GRASS (Cynodon dactylon).

BROWN PATCH (Rhizoctonia solani) was widespread and responsible for considerable damage to lawns and sports greens. Reports of its occurrence were received from many areas, including the Metropolitan Area, Central and North Coast, Central Tablelands and Riverina.

RUST (Puccinia cynodontis) was frequently observed in the Metropolitan Area following warm, damp weather in late Summer.

SMUT (Ustilago cynodontis) again occurred extensively over a wide area of Coastal N.S.W.

CROWSFOOT or CRAB GRASS (Eleusine indica).

BLIGHT (Helminthosporium sp.) occurred extensively following heavy rain in the late Summer at Narara and Gosford (C.C.).

QUEENSLAND BLUE COUCH (Digitaria didactyla).

FROST. A heavy frost in early May severely burnt Blue Couch in the Metropolitan Area.

KIKUYU (Pennisetum clandestinum).

BROWN PATCH (Rhizoctonia solani) was reported from Grafton (N.C.) and the Metropolitan Area.

LEAF SPOT (Piricularia sp.) developed extensively in the Metropolitan Area following a prolonged period of moist, warm weather in late Summer.

PASPALUM (Paspalum dilatatum).

ERGOT (Claviceps paspali) was very common on the Coastal belt, particularly within the Metropolitan Area, and on the Northern Tablelands and Slopes. Species of Cerebella and Fusarium were commonly associated with the condition.

PRAIRIE GRASS (Bromus unioloides).

SMUT (Ustilago bromivora) occurred widely on the Central Coast, North Coast and Northern Tablelands.

REED GRASS (Phragmites communis).

RUST (Puccinia magnusiana) was observed at Lower Portland (M.A.). Infection was very heavy.

SUMMER GRASS (Digitaria adscendens).

LEAF BLAST (Piricularia sp.) developed to a severe extent in the Metropolitan Area and on the Central Coast following continuously dull, showery and humid weather in the late Summer.

SWAMP WALLABY GRASS (Amphibromus Neesii).

STEM RUST (Puccinia graminis tritici) was recorded from Bribbaree (S.W.S.).

HEAD SMUT (undetermined) was recorded from Bribbaree (S.W.S.).

WILD OATS (Avena fatua).

STEM RUST (Puccinia graminis avenae) occurred extensively throughout the North-West.

CROWN RUST (Puccinia coronata) was observed on the Central and North Coasts and in many localities throughout North-Western N.S.W.

WIMMERA RYE GRASS (Lolium rigidum).

LEAF SPOT (Helminthosporium sp.) occurred to a minor extent in the pasture improvement plots at Wagga Agricultural College and Experiment Station (S.W.S.).

SLIME MOULD (Physarum sp.) developed to a considerable extent on a rye grass and clover pasture at Gundagai (S.W.S.)

WINTER GRASS (Poa annua).

LEAF RUST (Puccinia poarum) was very prevalent on the Central Coast.

FIELD AND FODDER CROPS.

CLOVERS.

RUST (Uromyces trifolii) occurred extensively on the Central and South Coasts. Heavy aecial development was noted on White Clover (Trifolium repens).

COWPEAS.

BACTERIAL SPOT (Pseudomonas syringae) was reported from Valla (N.C.).

ROOT ROT (Fusarium sp.) was responsible for a loss of 80% in one crop at Grafton (N.C.).

LINSEED.

The acreage sown to linseed showed a marked increase from 1,019 acres in 1947/48 to approximately 8,000 acres this season.

PASMO (Septoria linicola = Sphaerella linorum) was recorded on linseed for the first time in N.S.W. during 1948/49. It occurred on the variety, Walsh, in the Walla Walla (S.W.S.) district. The outbreak was reported to be general in the district and some crops were severely infected.

FROST INJURY caused slight to moderately heavy losses throughout the State. Greatest damage was caused on the North Western Slopes and the North Central Plains, where losses of up to 20% were experienced.

CORTICAL ROOT ROT (Rhizoctonia (?solani)) caused some damage in seedling stands in the Gunnedah district and elsewhere in the North-West of the State. Losses between 5% - 10% were reported in some crops.

ZINC DEFICIENCY was observed in the Boggabri, Narrabri and Maule's Creek area (N.W.P.). Affected plants were stunted and showed a type of rosetting of the flowering stalk. A tip die-back condition and failure to tiller were also common. Small bronze spots occurred on many of the upper and middle leaves. The condition was most evident in late-sown crops on land which had previously been out to pasture for some years. Tests with soils from affected areas gave pH readings between 7.35 and 7.85.

RUST (Melampsora lini) was not observed on linseed during the season. It was, however, recorded on wild flax (Linum marginale) in North Western N.S.W. Reports of a new strain of Melampsora lini capable of attacking the hitherto rust-resistant variety, Walsh, have been received from other States.

LUCERNE.

DOWNY MILDEW (Peronospora trifoliorum) caused slight to moderate damage to foliage in many lucerne-growing districts, particularly on the Central Coast.

LEAF SPOT (Pseudopeziza medicaginis) was again widespread, being reported from all lucerne-growing areas. Losses, however, were not serious.

STEM NEMATODE DISEASE (Anguillulina dipsaci) was reported from several localities. It was most in evidence on the Central and North Coast.

WITCHES BROOM (Virus) was observed mainly in old stands in the Western Districts. Two stands at Illabo (S.W.S.), down for periods of 7 and 8 years respectively, each showed 10% infection.

RUST (Uromyces medicaginis) was widespread but caused little damage in general. A report of moderately heavy infection was received from Bellata (N.W.P.).

VIOLET ROOT ROT (Rhizoctonia crocorum) was reported from Albion Park (S.C.).

SLIME MOULD (Physarum sp.) developed on many lucerne stands in the Coastal areas during the Summer. Extensive superficial growth was reported from Jamberoo (S.C.) and Krambach (C.C.).

LUPINS.

ROOT and STEM ROT (Sclerotinia sclerotiorum) caused considerable damage in some crops in the Richmond-Windsor district (M.A.).

ROOT ROT (Fusarium sp.) was reported from Toongabbie (M.A.).

ROOT ROT (Pythium sp.) was reported from a number of localities within the Metropolitan Area.

MUSTARD.

WHITE RUST (Cystopus candidus) was reported on Brassica juncea from several localities in New South Wales. Although troublesome in some areas, no severe losses were sustained. The disease has not yet been recorded on Brassica nigra or B. alba in this State.

MOULD (Aspergillus sulphureus) was very prevalent in a seed sample of Brassica nigra submitted for examination by a city commercial firm. The sample was representative of a consignment of 280 bushels of seed of the variety, Californian Trieste, which was harvested too early. The development of mould was associated with "sweating" of the seed, which had a moisture content of between 11% and 12% as compared with the normal figure of 8.3%.

PEANUTS.

ROOT and CROWN ROT (Sclerotinia minor) was very severe in an experimental plot of peanuts at Yanco Experiment Farm (M.I.A.). A loss of 50% was experienced.

BLACK SPOT (Cercospora personata) occurred to a minor extent on the North Coast.

RAPE.

WHITE RUST (Cystopus candidus) was reported to be troublesome at Narrabri (N.W.P.) early in the season. Dry conditions during the Spring and early Summer checked its later development and losses were negligible.

SOYBEANS.

BACTERIAL BLIGHT (Pseudomonas glycinea) was observed in a number of crops on the Northern Tablelands. Infection, in all instances, was slight.

BIG BUD (Virus) occurred to a minor extent in the varietal trial plots at New England Experiment Farm, Glen Innes.

MOSAIC (Virus) was reported in several crops at Grafton (N.C.). In no instance was infection present in more than trace amounts.

TOBACCO.

The acreage sown to tobacco in New South Wales was 320 acres compared with 380 acres the previous season. Seasonal conditions favoured crop growth generally and good yields were obtained.

DOWNY MILDEW (Peronospora tabacina) was not troublesome in the seed-bed but late in the season it developed in the field and caused slight to moderate depreciation of leaf value.

MOSAIC (Virus) occurred extensively and some crops in the Ashford (N.W.S.) area showed up to 95% infection. The leaf from infected crops cured well, however, and losses were not as heavy as originally expected.

ROOT KNOT (Heterodera marioni) was very prevalent on the lighter soils in the Ashford (N.W.S.) area and was responsible for considerable losses in that district. The disease occurred elsewhere in the Northern part of the State but infection, for the most part, was not heavy.

ROOT ROT (Rhizoctonia solani) caused substantial losses in the seed-bed and later showed up to a minor extent in the field in the Tenterfield (N.T.) district.

BIG BUD (Virus) was more in evidence than usual in the Ashford (N.W.S.) and Tenterfield (N.T.) districts, although no reports of heavy infection were received.

SPOTTED WILT (Virus) was reported from several localities in Northern New South Wales. Only occasional plants were infected in the majority of crops.

FRUIT.

CANE FRUITS.

BOYSENBERRY AND YOUNGBERRY.

ANTHRACNOSE (Elsinoe veneta) caused severe spotting of leaves and canes of current season's growth in commercial crops at Robertson (S.T.) and in home gardens in the Metropolitan Area.

CURRANT - BLACK.

DIE-BACK (Verticillium albo-atrum) was recorded for the first time in New South Wales on this host from Batlow (S.W.S.). About 5% of a 3-year-old commercial crop had died out as the result of infection, over a period of 2 years. The plants had been imported from Tasmania.

LEAF SPOT (Mycosphaerella ribis) was recorded from Batlow (S.W.S.).

LOGANBERRY.

RUST (Phragmidium sp.) on Black Loganberry and ANTHRACNOSE (Elsinoe veneta) on Red Loganberry were reported from Metropolitan gardens.

RASPBERRY.

LEAF SPOT (Septoria sp.) and ANTHRACNOSE (Elsinoe veneta) were recorded from the Metropolitan Area.

YOUNGBERRY.

See Boysenberry.

CITRUS FRUITS.

PHYTOPHTORA ROOT AND COLLAR ROT (Phytophthora citrophthora). No seed-bed outbreaks were observed in Metropolitan nurseries in Spring 1948 or Autumn 1949. Losses from Root Rot continued in several nurseries, of budded trees originating in infected seed-beds of 1947. Following rain in March, a small amount of Collar Rot was observed in lemons and oranges in several nurseries.

Wet conditions in early Summer caused an accentuation of Root Rot in river flat localities in the Windsor, Sackville, Lower Portland, Ebenezer, Colo, Agnes Banks and Castlereagh districts (M.A.). Records of severe root injury in poorly-drained soils were also received from Wollongong (S.C.) and Drake (N.C.).

Following a period of prolonged rain during Summer 1948-49, P. citrophthora was recorded causing extensive root and fibre rotting in a block of Washington Navel oranges on rough lemon stock planted in new ground in Spring, 1947, at Mangrove Mountain (C.C.) in deep sandy soil. The trees appeared to be free of infection at the time of planting and had made good root growth subsequently.

In the MI.A. dry Winter conditions since 1942 have resulted in a general high level of tree health, but trees affected in earlier seasons continue to decline.

Collar Rot was very prevalent, as usual, on lemons in home gardens and orchards in Coastal areas.

BLACK SPOT (Guignardia citricarpa) appeared on maturing Valencias in the late Spring and increased rapidly in severity towards the end of November, following hot weather, in the Hills and Hawkesbury River districts (M.A.). Low prices, small fruit size and late maturity resulted in delayed harvest in the Hawkesbury River district (usually an early one) with consequent development of Spot. Fair control was obtained where sprays were applied but faulty timing because of wet Spring weather of 1947 was obvious in some orchards. Maturing maincrop lemons and Marsh grapefruit showed a fairly heavy development of Spot at Lower Portland (M.A.) in July, 1948.

Many of the Valencia oranges from the Gosford (C.C.) district, packed for export to Singapore and Hong Kong, developed Black Spot prior to being placed aboard ship. The difficulty was overcome by accepting fruit only from trees, of 12 years of age or less, which had been sprayed at appropriate intervals with a Bordeaux mixture of low copper content.

SEPTORIA SPOT (Septoria depressa). Showery weather and long periods of dew were experienced in the Autumn of 1948 in the M.I.A. and Riverina. In addition, because of the short,

relatively cool Summer, maincrop Washington Navel oranges were late in maturing and many were not harvested until August. Heavy frosts were experienced in late June and July. As the result of all these factors, the heaviest epiphytotic of Septoria Spot since 1939 developed and there was an overall loss of about 50% of the crop due to Septoria Spot and frost, and of this Septoria Spot accounted for about 4/5 of the damage. In many blocks an almost total loss was experienced. In demonstration spray blocks all fruit on the unsprayed trees was unmarketable, but sprays of Bordeaux $2\frac{1}{2}$-$2\frac{1}{2}$-100, 1-1-100, Zinc Bordeaux 5-1-4-100 and copper oxychloride 1 lb. to 100 gallons, all with the addition of white oil, applied in mid-April gave good control.

Not only were orchard and packing house losses heavy, but shipments of fruit destined for New Zealand were condemned because of the development of Septoria Spot subsequent to packing. Septoria Spot was also recorded from a number of localities on the Upper Murray (R.).

Maincrop lemons in the M.I.A. were a total loss because of frost and Septoria damage. The development of Septoria on maincrop Valencias was surprisingly light, less than 1% of the crop showing traces of infection.

MELANOSE (Diaporthe citri). Because of dry Spring and early Summer weather little infection occurred on young maincrop fruit. However, following the onset of wet weather towards the end of December, a considerable extension of infection took place, especially in older unsprayed blocks of Emperor mandarins, and Washington Navel oranges, and injury was particularly apparent by April in orchards in the Windsor, Pitt Town, Sackville, Ebenezer and Hawkesbury River districts (M.A.). A comparable development was also observed in the Gosford (C.C.) district, particularly on Washington Navel oranges, even on reasonably young (10-15 year) trees. Flushes of Autumn growth made during very wet weather were observed to be heavily infected, Marsh grapefruit and Eureka lemon showing the most severe effect. Little infection of Valencia orange fruit was observed, routine Black Spot sprays having afforded reasonably good control. Some Autumn infection of young Valencia foliage was noted. Melanose was responsible for considerable twig infection and die-back on trees which had been skeletonised or cut back.

SCAB (Sphaceloma fawcettii scabiosa). Because of dry weather at and subsequent to blossoming, maincrop lemons in most Coastal orchards were relatively free of Scab, though several orchards in the Gosford (C.C.) district showed bad infection. Intermediate crop fruit setting from Summer blossoms was generally very heavily infected, especially in older blocks. Scab was recorded on Washington Navel oranges at Ourimbah (C.C.) and on Wheeny grapefruit at Terrigal (C.C.) in May, 1949. The fruit affected were of the intermediate crop setting which had developed during very wet weather. Only very slight disfigurement occurred and the fruit appeared to be growing out of the condition.

Most nurserymen in the Gosford-Wyong-Terrigal districts (C.C.) sprayed rough lemon stocks with Bordeaux mixture regularly during the season and obtained good control of Scab. Unsprayed trees were markedly retarded in growth. Previous to 1948 Scab was rather uncommon in Metropolitan nurseries but it became general following wet weather in Spring 1948. It is now well established and, following Summer 1948-49 rains, developed heavily on seedling stocks causing much retardation of growth. It also spread to current season's seed-beds and will reduce the numbers of suitable sized seedlings for planting out next Spring.

Scab was also recorded on Citrus hystrix at Narara Nursery (C.C.).

ARMILLARIA ROOT ROT (Armillaria mellea) continues to be a major problem in the Mangrove Mountain (C.C.), Maroota and Hawkesbury River (M.A.) districts. Wet Autumn conditions favoured the development of fructifications and in several cases their appearance has enabled the infection to be located in previously unsuspected sites.

BROWN ROT and LEAF AND TWIG BLIGHT (Phytophthora citrophthora). Brown Rot was observed in Washington Navel oranges at Dooralong (C.C.) and Castlereagh (M.A.) following March rains. Losses were slight. In several properties at Lisarow (C.C.) general, though not severe, leaf and twig infections were observed during Autumn 1949 on Washington Navel orange trees on rough lemon stock. Examination of the root systems of trees in the blocks revealed moderate damage to the fibrous roots. Several times during the Autumn these blocks had been partially flooded and it is possible that the pathogen may have been introduced and spread then from adjacent older citrus orchards. Very heavy rain was experienced in the Hawkesbury River and Gosford and Wyong districts in early June, and the Nepean and Colo Rivers, and Wyong, Dooralong, Ourimbah and Narara Creeks carried record or near-record floods. Citrus orchards on river flats were submerged for up to 48 hours. Brown Rot subsequently developed on all fruit on these trees and defoliation commenced by the end of June. Brown Rot was also apparent in orchards near to the inundated areas shortly afterwards, but infection was not so heavy.

GREEN AND BLUE MOULDS (Penicillium digitatum and P. Italicum) caused unusually heavy losses of harvested maincrop Valencia fruit during January and February, 1949. Unfavourable wholesale prices influenced growers in retaining crops of Valencias on their trees until late in the season. Poor keeping quality of this fruit after harvest, principally because of green mould development, continued to exercise a depressing effect on wholesale prices throughout the season.

SOOTY BLOTCH and FLY SPECK (Gloeodes pomigena and Leptothyrium pomi) were recorded on unsprayed Washington Navel oranges in the Metropolitan Area and in Wheeny grapefruit at Terrigal (C.C.); also on unsprayed Washington Navel, Joppa and Siletta oranges in low-lying areas around Niagara Park and Narara (C.C.).

RHIZOCTONIA COLLAR ROT (Rhizoctonia solani) was recorded as responsible for heavy losses to seedling stocks of Poncirus trifoliata at Grose Vale (M.A.).

SCLEROTINIA BLIGHT (Sclerotinia sclerotiorum) was little in evidence in Metropolitan nurseries during late Winter and Spring, 1948.

SCALY BUTT of Poncirus trifoliata (virus). This disease has been the subject of investigation for a number of years in N.S.W. It affects the butt of the trifoliata stock in association with lemon, Washington Navel orange, grapefruit, some mandarins and, very rarely, Valencia. The percentage of affected trees varies from one block to another. The scaling is associated with very pronounced stunting of the scion. It has now been established that the disease is due to the presence of a virus in the scion, a virus which is symptomless except in combinations involving trifoliata. Scaly butt has been recorded throughout the State in all citrus-growing areas.

PSOROSIS (Virus) was recorded on 31-year-old Washington Navel oranges in a Leeton (M.I.A.) orchard. Thompson Navel oranges scattered through the block and adjacent to badly-affected trees were not affected.

SHELL BARK OF LEMONS (suspected Virus) is shown by all ageing lemons in Coastal orchards. A particularly severe occurrence was recorded in 18-year-old lemons on sour orange stock at Griffith (M.I.A.).

EXANTHEMA (Copper deficiency) development has been fairly widespread in a chronic form throughout the Central Coast Area. Bordeaux mixture spray applications, together with several soil applications of copper sulphate, have been observed to improve tree vigour and crop production in the instance of orchards located in the lowland areas. On Mangrove Mountain (C.C.), particularly where the disease is a long-standing condition, improvement is much slower, requiring the application of 1½ lbs. to 2 lbs. of copper sulphate per tree per year. Trees on old citrus land of poor sandy soil which were yielding practically no crop gave an average of five bushels per tree after two years' application of copper. This disease is perhaps the most important affecting tree vigour in Central Coast orchards.

YELLOW LEAF (Magnesium deficiency) has been particularly widespread in the Gosford district (C.C.) during the Autumn of 1949. Trees in many situations have been affected but, in particular, those located in very sandy soils, in badly-drained sites, or where sulphate of ammonia has been the principal source of nitrogenous fertiliser. Factors influencing soil acidity appear to play a considerable part in the development of this condition. Observations over the past several seasons have indicated that by the time definite symptoms of Yellow Leaf have been observed in citrus trees, immediate remedial treatment will not prevent the development of further leaf yellowing in the same trees twelve to eighteen months later.

It is more common to observe magnesium deficiency combined with Exanthema (copper deficiency) rather than for these diseases to occur separately. When both diseases are present symptoms are greatly modified and poor cropping and poor fruit size may be the only symptoms the trees exhibit apart from modified symptoms of Exanthema. It is important that both deficiencies be corrected at the same time immediately their occurrence is suspected.

Acute magnesium deficiency was also observed in Hawkesbury River (M.A.) orchards and was recorded for the first time from the M.I.A. on mature trees of Wheeny grapefruit and Washington Navel orange in deep sandy soil at Stanbridge.

MOTTLE LEAF (Zinc deficiency). As usual, was general in Western districts. In the Gosford district (C.C.) several instances of mild zinc deficiency have been observed on Mangrove Mountain orchards, but generally it is not an important disease. It is usually observed associated with Exanthema.

MANGANESE DEFICIENCY. Early flushes of Spring growth, particularly on the southern sides of trees in the Somersby-Mangrove Mountain area (C.C.) were observed to be affected with mild manganese deficiency. As the growth hardened, the condition tended to disappear. It is not regarded as an important disease and does not generally warrant remedial treatment.

DIE-BACK OF WHEENY GRAPEFRUIT (Probably nutritional). Die-back associated with heavy cropping was recorded from

orchards in the Hills, Hawkesbury River (M.A.) and Gosford (C.C.) districts. Crops at Leeton and Griffith (M.I.A.) did not show the condition.

MANDARIN SCALD (Probably nutritional). A slight development of Scald was recorded affecting Emperor mandarins carrying a heavy crop at Lower Portland (M.A.).

BORON TOXICITY. Severe symptoms of Boron toxicity were recorded from some Metropolitan home gardens following soil applications of borax. Similar symptoms were observed on trees in several M.I.A. orchards and from Cobar (W.D.).

LEAF PUCKERING OF WHEENY GRAPEFRUIT (Temperature effect) was prevalent as usual in Coastal orchards and home gardens on Spring-formed foliage.

FROSTING. Maincrop Valencias in the M.I.A. suffered severely from frosting, resulting in a high proportion of very low grade dry fruit, much of which had to be condemned.

POME FRUITS.

The apple crop was very light this season in all districts except the Murrumbidgee Irrigation Areas, due mainly to extremely unfavourable weather conditions at the flowering stage. The pear crop was normal. Drought conditions in the Young district (S.W.S.) further reduced yields.

APPLE.

BLACK SPOT (Venturia inaequalis). Although the season was not particularly favourable for Black Spot development, Spring rains were of sufficient duration at Orange (C.T.) and Batlow (S.W.S.) for the initiation of early fruit infections, especially in those orchards which fared worst in last season's epiphytotic. In most districts the dry mid-summer period arrested the progress of the disease. However, in the Hills district (M.A.) the mid-summer period was extremely wet with temperatures lower than normal, and the degree of infection was much greater than is usually experienced.

The disease did not occur on the M.I.A. and was observed at Young (S.W.S.) only in unsprayed or poorly-sprayed orchards. It was of little consequence in the Bathurst district (C.T.) where it appeared in some orchards late in the season.

POWDERY MILDEW (Podosphaera leucotricha). The inoculum of this disease has built up considerably over the past two seasons, even where lime-sulphur has been used for Black Spot control. The disease was of widespread occurrence in the Bathurst district (C.T.), in the Hills district (M.A.), and was more prevalent than usual at Orange (C.T.), Batlow (S.W.S.) and Oakdale (S.C.). A verbal report from the Northern Tablelands indicates that Mildew is serious and widespread, especially in the Armidale-Kentucky area. (N.T.)

Slight infection of apple stocks was again reported from nurseries at Carlingford and Ermington (M.A.).

DIE-BACK (Dothiorella sp.). Again the limb canker phase of this disease, which is confined largely to the Hills district (M.A.), was not apparent. The season was again particularly favourable for tree growth.

The spur blighting condition, with which the same fungus appears to be associated, has increased in intensity and is of more widespread occurrence. Infected terminals with subsequent die-back were also encountered. Preliminary spraying tests, using Bordeaux mixture 15-15-100-½ at "green-tip", have indicated some measure of control of these phases of the disease.

Die-back, following attack by the pin-hole borer (Xyleborus pseudangustatus) with subsequent wood rotting, caused by a fungus which closely resembles Dothiorella, was again not observed. No current activity of the pin-hole borer was noted.

McINTOSH RED TRUNK CANKER (?Dothiorella sp.). This serious cankering disease of McIntosh Red apple trunks in the Oakdale-Oaks-Orangeville area (S.C.), which has been of such concern to orchardists in that locality in recent years, has ceased, at least temporarily, to be of ary major economic importance.

No new infections were noted this season and the majority of old cankers have ceased to extend.

It is thought that the pin-hole borer (Xyleborus pseudangustatus) may act as a vector in the establishment of new infections. The cessation of new infections has coincided with the occurrence of two good growing seasons, resulting in enhanced tree vigour, and with the cessation of pin-hole borer activity.

ROOT ROT (Armillaria mellea) was recorded on a few trees at Glenorie (M.A.).

HEART ROT (Schizophyllum commune) was found to have invaded many old cankers on the trunks and limbs of the McIntosh Red variety at Oakdale (S.C.). This fungus had progressed to kill a number of limbs.

YELLOW WOOD ROT (Polystictus versicola). At Batlow (S.W.S.) an orchard of old Granny Smith trees is severely affected by this disease. The orchard has been eroded and the debilitated trees have suffered from sun-scald, providing ready access for the fungus.

This fungus has been associated with some grafting failures but the proportion of infected grafts has not been high.

BITTER PIT (physiological) occurred in early-harvested Granny Smiths at Oakdale (S.C.) but was of less importance throughout the State than anticipated in view of the generally light crops of large fruit.

JONATHAN SPOT (physiological) was recorded at Young (S.W.S.) and was also reported from other centres, mainly on the Jonathan variety.

WATERCORE (physiological) was of fairly general occurrence to a slight degree but much less than last season.

BORON DEFICIENCY was recorded from Hill Top (S.C.). Good results are still being obtained from borax dressings in the Northern and Central Tablelands.

LITTLE LEAF (Zinc deficiency) was again recorded on untreated trees on the M.I.A. It was also recorded at Dural (M.A.) and from alluvial river flats near Scone (C.C.). There is also a report of suspected Little Leaf on deep alluvial soil near Gulgong (C.T.).

MANGANESE DEFICIENCY. Symptoms suggestive of manganese deficiency have been observed at Glenorie (M.A.).

INTERNAL BARK NECROSIS (MEASLES) (Manganese toxicity?). Severe internal bark necrosis with subsequent bark cracking and twig and limb die-back occurred at Orange (C.T.) in Delicious trees which had been subjected to heavy sulphate of ammonia fertilising over the past four years. Soil pH readings as low as 4.2 were obtained and manganese toxicity is suspected. Chemical analysis of leaf and bark material has not yet been completed.

HAIL. Severe hail damage has been recorded from the Young district (S.W.S.).

LEAF SCORCH (non-parasitic) was again prevalent throughout the State, and is probably associated with the application of lime sulphur and lead arsenate sprays under high pressure.

VARIEGATION (?Virus) was present throughout the State, but no ill effects have been reported.

LEAF SPOT (Phyllosticta sp.) was of no consequence this season.

PEAR.

BLACK SPOT (Venturia pyrina) was recorded at Batlow (S.W.S.), Orange (C.T.), Bathurst (C.T.) and in the Hills district (M.A.). In contrast to apple spot, pear spot appears to have been of greater consequence this year than last season, although infection has nowhere been severe. This is probably due to the build-up of inoculum which occurred last season.

FLECK (Fabraea maculata) was again recorded on nursery pear stock at Carlingford and Ermington (M.A.). Adjacent Callaryana stocks were not infected.

BORON DEFICIENCY. Good results are being obtained with borax soil dressings, although occasionally trouble from over-dosage is reported.

HAIL. Severe damage occurred in portions of the Young district (S.W.S.).

QUINCE.

FLECK (Fabraea maculata) caused severe damage in quince trees in Coastal areas. At Oakdale (S.C.) trees were defoliated in January and the fruit was intensely flecked. The trees came partially into leaf again and these leaves subsequently became heavily infected.

The disease was again recorded on quince stocks in nurseries at Carlingford and Ermington (M.A.).

BURR KNOT (non-par.) is of general occurrence on quince trees throughout the State.

STONE FRUITS.

The season was a favourable one for stone fruits, and a normal to heavy crop was harvested in spite of considerable reduction by frost in the north of the State, Brown Rot on the M.I.A. and drought conditions in the Young district (S.W.S.).

ALMOND.

SHOT HOLE (Clasterosporium carpophilum) was again prevalent on unsprayed trees in the Young district (S.W.S.) but infection was not of the same intensity as last season.

RUST (Puccinia pruni-spinosae) was of no consequence this season.

FROST again damaged almond blossoms in the Young district (S.W.S.).

APRICOT.

BACTERIAL CANKER (Pseudomonas cerasi var. prunicola = Ps. syringae, van Hall). This disease has again flared up, after two years' quiescence, on the M.I.A., particularly in the Leeton Area, at Orange (C.T.) and Bathurst (C.T.). Young trees up to 4 years old suffered most severely, many being killed. In some orchards where the disease had killed numbers of trees in the 1943-44-45 outbreak, two and three-year-old replants have been severely attacked.

BROWN ROT (Sclerotinia fructicola) was of little consequence this season as crops in most areas were harvested in dry weather. Some blossom blight occurred on the M.I.A. There was slight infection only in some of the later maturing Coastal varieties.

BLACK HEART (Verticillium dahliae) was recorded for the first time on stone fruits in this State, the record being made at Griffith (M.I.A.) in a block of 250 five-year-old Trevatt apricots, of which the disease had killed 32. Subsequently, Black Heart has been detected in a number of orchards in the Griffith area, and in all cases the trees have either been grown on old tomato land, or have been interplanted with tomatoes.

SHOT HOLE (Clasterosporium carpophilum) again developed on Trevatt apricots on the M.I.A. but, as usual, most of the scabs flaked off before harvest. A Trevatt tree in the Metropolitan Area was observed to behave similarly.

The disease occurred throughout the State and early-maturing Coastal varieties were again seriously scabbed.

INTERNAL BREAKDOWN (non-parasitic) was not particularly serious on the M.I.A. this season. Some yeast breakdown occurred in over-mature fruit picked after rain at the end of the harvest period.

FRECKLE (Cladosporium carpophilum) occurred to a slight degree in apricots grown in Coastal districts and at Bathurst (C.T.).

ROOT ROT (Phytophthora cinnamomi) was recorded for the first time on nursery trees at Carlingford (M.A.). Only a few trees were involved. Infection occurred following very heavy rains in January.

LEAF CURL (Taphrina deformans) was recorded in the Windsor-East Kurrajong area (M.A.).

ZINC DEFICIENCY was again recorded on the M.I.A.

TWIG BLIGHT (Sclerotinia sclerotiorum) was recorded in the Windsor-East Kurrajong area (M.A.).

CHERRY.

BACTERIAL CANKER (Pseudomonas cerasi var. prunicola = Ps. syringae, van Hall). For the first time since the Winter and Spring of 1945, Bacterial Canker caused serious damage to cherry trees, especially in the Orange district (C.T.). Trees up to seven and eight years of age were severely attacked, with the subsequent loss of many limbs and sometimes entire trees.

About mid-November an attack of unprecedented severity occurred on leaves and fruit. In some orchards at least 50% of the fruit on individual trees was rendered unsaleable. All orchards where a Bordeaux Mixture spray had been applied at the "bud-swell" stage were notably free of this phase of the disease, which attacked fruit of all varieties at all the stages of maturity reached at that time.

BROWN ROT (Sclerotinia fructicola). Although the inoculum of this disease was at an extremely high level following last season's epiphytotic, especially in the Orange district (C.T.), and in spite of a considerable degree of blossom blighting in early Spring, cherry crops were harvested free of Brown Rot this season. Trace infection was observed in only one orchard (unsprayed) at Orange. Severe blossom blighting occurred at Batlow (S.W.S.).

SHOT HOLE (Clasterosporium carpophilum) was of widespread occurrence in cherry orchards.

CRACKING OF FRUIT. Slight losses were sustained in the variety Early Lyons in the Orange district (C.T.) following a thunderstorm during the harvesting period.

LEAF SPOT (Cercospora circumcissa) was recorded on nursery trees at Carlingford and Ermington (M.A.).

NECTARINE.

BROWN ROT (Sclerotinia fructicola). The nectarine crop was harvested free of Brown Rot except for slight infection late in the harvesting period in the Hills district (M.A.).

LEAF CURL (Taphrina deformans). An epiphytotic of this disease occurred in nectarines throughout the State. See remarks under Peach, below.

RUST (Puccinia pruni-spinosae) developed late in the season in all districts and, although the intensity of the disease was much less than it was last season, premature defoliation occurred.

CROWN GALL (Agrobacterium tumefaciens) was responsible for the death of a single tree in an orchard at Orange (C.T.). It was again a problem in nursery propagation.

WATER-LOGGING. Some orchardists in the Orange district (C.T.) have lost appreciable numbers of nectarine trees as an aftermath of last season's waterlogged soil conditions, especially in November and December, 1947, and February, 1948. Some trees failed to burst into leaf this season, but mostly heavy crops were set and, with the advent of dry weather, many trees collapsed in November and December. These trees, most of which had dull yellow foliage, had been surviving on only an inch or two of sound bark at the crown, with only one or two roots functioning. All attempts to isolate a root or crown pathogen failed.

BACTERIAL CANKER (Pseudomonas cerasi var. prunicola = Ps. syringae, van Hall) was recorded on a 2-year-old seedling nectarine in a home garden at Leeton (M.I.A.).

FRECKLE (Cladosporium carpophilum) was recorded in slight degree in the Hills district (M.A.).

SHOT HOLE (Clasterosporium carpophilum) was of general occurrence on leaves.

SHRIVEL (physiological). This condition, which caused such widespread losses in Tableland areas last season, did not occur this year. The Summer was warmer and much drier in these areas, and the fruit ripened normally, reaching maturity much earlier than it did last season.

PEACH.

BROWN ROT (Sclerotinia fructicola) caused no losses in any district other than the M.I.A. this season. The majority of the Coastal varieties were harvested before the onset of the January rains and escaped the disease. The dry midseason period allowed Tableland and inland dessert varieties to be harvested free of Brown Rot.

However, in late canning varieties on the M.I.A. there occurred an epiphytotic of greater intensity than that which occurred in the late summer of 1946. Losses of Phillip's Cling, Golden Queen and Pullar's Cling were estimated at a total of 3,000 to 3,500 tons, or approximately 33% of the crop. The later varieties, Golden Queen and Pullar's Cling, were more severely affected than the earlier variety, Phillip's Cling, the harvesting of which was practically completed before the peak of the epiphytotic was reached.

Individual orchard losses ranged as high as 60%, the greatest losses occurring in orchards on light sandy soils.

RUST (Puccinia pruni-spinosae) infection was of much less intensity this year than last season wherever reasonable attention was paid to control measures. In some Coastal orchards where trees carried numerous rust cankers following last season's epiphytotic, and where control measures were not practised, rust again caused extensive premature defoliation.

In most districts a slight degree of infection occurred late in the season, resulting in premature defoliation in some instances.

Control of this disease is being achieved in canning varieties on the M.I.A. by the use of two weak Bordeaux mixture sprays during the growing season following a strong Bordeaux mixture spray at "pinking".

LEAF CURL (Taphrina deformans). Following a very wet season last year, an epiphytotic of Leaf Curl occurred throughout the State, with the exception of the M.I.A. where it was found only on neglected, closely-planted trees at Lecton. Complete loss of crop in individual unsprayed orchards has been reported from Young (S.W.S.) and unsprayed trees in other districts were severely damaged.

Extensive damage also occurred in many sprayed orchards. In all cases investigated the spray had been applied too late for effective control at the high level to which the inoculum built up last season. Wherever the timing of the spray was accurate control was achieved.

Enquiries concerning this disease were received from widely-scattered areas throughout the State.

CROWN GALL (Agrobacterium tumefaciens) again manifested itself as a problem in nurseries, with recordings as high as 34% in nurseries in the Metropolitan Area.

An observation at Griffith (M.I.A.) indicated that stocks raised from the seed of certain white-fleshed peaches may possess a degree of resistance to Crown Gall not evident in stocks raised from the seed of yellow-fleshed varieties.

FRECKLE (Cladosporium carpophilum) occurred in unsprayed orchards but trace infection only was evident in orchards which received the recommended spray schedule.

SHOT HOLE (Clasterosporium carpophilum) was again fairly prevalent. On the M.I.A. occasional fruits were severely attacked.

BACTERIAL CANKER (Pseudomonas cerasi var. prunicola = Ps. syringae, van Hall) severely damaged a block of 300 three-year-old J.H. Hale peach trees at Orange (C.T.). Every tree was infected to some degree, many were killed and many lost one or two branches. These trees had grown well and had vigorous root systems. They were pruned very heavily at the height of dormancy and much of the infection occurred at pruning cuts, although bud infection was also common.

Of the trees and limbs which died, the majority collapsed suddenly just as the young leaves were unfolding. The surviving portions of all trees grew vigorously.

POWDERY MILDEW (Sphaerotheca pannosa). The first orchard scale attack by this disease in N.S.W. was recorded this season at Stanbridge (M.I.A.). Previously the disease has affected occasional fruits on occasional trees, mostly in the Metropolitan Area. The varieties involved were Phillip's Cling, Golden Queen, Pullar's Cling and Elberta. Infection was confined entirely to the fruit, which was severely scabbed.

The infection was most severe towards one end of the orchard, where a hedge of briars is growing. This briar hedge was found to be severely attacked by Mildew.

A survey of the M.I.A. revealed that the disease was present in trace amount only in a few other widely separated orchards.

Powdery Mildew was of general occurrence on peach stocks in a nursery at Ermington (M.A.).

ROOT ROT (Phytophthora cinnamomi and Phytophthora sp.). Some 20,000 to 25,000 peach trees died in a nursery at Carlingford (M.A.) following the heavy rains in January. Phytophthora cinnamomi and an as yet unidentified species of Phytophthora were isolated from the roots of these trees.

The drainage of the site where the trees died is exceedingly bad. The land (heavy clay loam soil) slopes fairly steeply and, in the centre of the block where most of the trouble occurred, the subsoil comes very close to the surface, with consequent raising of the water table. Following the January rains this section was completely water-logged for a considerable period. Wherever the drainage was reasonably good this pathogen does not appear to have been of any consequence.

SILVER LEAF (Stereum purpureum) was recorded on a tree in a home garden at Beecroft (M.A.).

STEM AND ROOT CANKER (Rhizoctonia solani) caused about 15% pre- and post-emergence damping-off in scattered patches throughout a seed-bed of peach stocks in a nursery at Carlingford (M.A.). The seed-beds were located in virgin ground ploughed in 1947.

ZINC DEFICIENCY was recorded from alluvial river flats near Scone (C.C.) and from the M.I.A.

MANGANESE DEFICIENCY was recorded at Ryde. Complete recovery was rapidly effected by the application of a 5-2½-100 manganese sulphate-rock lime spray in mid-December.

BLACK HEART (Verticillium dahliae) was recorded on peach for the first time in N.S.W. The record was made in young trees growing in old tomato land at Griffith (M.I.A.). Few trees were involved. Also see Apricot.

SPOILAGE. Some fruit splitting with subsequent invasion by semi-pathogenic micro-organisms occurred on the M.I.A. but was not apparent in other districts. A Sydney canning firm lost about 5% of peaches through spoilage (other than Brown Rot) in transportation from Griffith (M.I.A.).

FROST caused considerable crop reduction in Northern and Central Western areas.

WATER SPOT (Physiological). A dark green spot of water-soaked appearance was observed on the skin of a small percentage of canning peaches on the M.I.A. in January. These glassy areas were of a diameter of 4-5 mm. and extended from the epidermis well into the flesh, sometimes reaching the stone. The condition, which resembled watercore in apples, gradually disappeared as the fruit reached maturity and no loss was sustained.

There was no suggestion of tissue breakdown and the spots appeared to consist entirely of an intracellular water injection which probably occurred during a period of extreme temperature fluctuation at the end of December.

ROOT KNOT (Heterodera marioni). A report of young peach trees attacked by eelworm was received from Denman (C.C.).

SALT INJURY. A case of seven-year-old peach trees suddenly collapsing due to salt injury was observed at Griffith (M.I.A.). This injury followed a subsoiling the previous season and this seams a possible explanation of the sudden collapse.

BORDEAUX MIXTURE SPRAY INJURY was reported at Leeton (M.I.A.) following the application of a 15-15-100 spray at leaf fall for Shot Hole control. Old lime was used and it is believed that the burning of the young wood was caused by free copper sulphate.

Slight injury was observed in an orchard at Griffith (M.I.A.) in trees sprayed with Bordeaux Mixture 2-2-100 in mid-October for Rust control. The variety, Pullar's Cling, was affected more than Golden Queen even where both varieties were worked on the one tree. The damage consisted in slight defoliation. A short period of showery weather followed the application of the spray.

PLUM.

BROWN ROT (Sclerotinia fructicola) caused no losses in Tableland areas in spite of a heavy infection in most orchards last year. Slight losses were sustained in Coastal districts in the later-maturing varieties.

RUST (Puccinia pruni-spinosae) was again serious in Coastal orchards, but was of little consequence at Orange (C.T.) where an epiphytotic occurred last season.

Rust assumed epiphytotic proportions in prunes at Young (S.W.S.) and on the M.I.A., where many trees were defoliated early and blossomed again in the Autumn. On the M.I.A. excellent control has been achieved by the use of a weak Bordeaux Mixture foliage programme.

CROWN GALL (Agrobacterium tumefaciens). Nursery plum trees at Carlingford (M.A.) in new ground are reported to be showing considerable Crown Gall development above ground.

PRUNE DIEBACK (cause undetermined). This die-back complex again manifested itself as one of major economic importance on the M.I.A. where many trees died this season.

It is now believed that the role of Cytospora sp., which almost invariably is issociated with the dead and dying trees, is of a secondary nature.

More satisfactory pruning and irrigation techniques have recently been evolved and trees treated according to these new methods have shown a marked improvement in vigour, with a consequent lessening in the amount of die-back.

It is thought that a third and very important factor in this die-back complex may be Rust, which has caused severe premature defoliation many times during the life span of the trees, with subsequent sun-scalding and depletion of carbohydrate reserves. The epiphytotic of Rust last season was probably the ultimate cause of the death of so many trees this year.

ROOT ROT (Armillaria mellea) was recorded on a single tree at St. Ives (M.A.).

ROOT ROT (Phytophthora cinnamomi). A number of Marianna and Myrobolan plum stocks growing in a badly-drained section of a nursery at Carlingford were affected by this disease.

YELLOW WOOD ROT (Polystictus versicola) killed occasional limbs in an orchard at Dural (M.A.).

"SCALD." The fruit condition previously referred to as "scald", which has occurred regularly over the last few years in early Spring and Summer following hot, dry periods, has now been established as being of insect origin. The insect responsible for the damage has been found to be the Coreid bug, Amblypelta nitida.

TROPICAL FRUITS.

AVOCADO PEAR.

ANTHRACNOSE (Gloeosporium sp.) was recorded in September for the first time from Duranbah (N.C.) causing one-sided blackening of twigs, mainly on the sothern side of well-grown trees and on the northern side of the trunks of young seedlings.

BANANA.

BUNCHY TOP (Virus). Records compiled by the Division of Horticulture show a continued fall in the incidence of this disease; 5,565 diseased plants were found and destroyed in an inspection-acreage of 120,621 compared with 5,942 in an inspection-acreage of 112,682 in the previous year. A total of fifty Bunchy Top detectors was employed in the Tweed, Brunswick and Richmond (N.C.) districts. No further outbreaks have been revealed in the Clarence or Yarrahappini (N.C.) eradication zones. The last record of the disease at Yarrahappini was on 10/4/47.

LEAF SPOT (Cercospora musae) again caused heavy losses in the Tweed and Brunswick (N.C.) districts. During the Spring months of 1948 it was a common sight to see bunches which had lost all leaf cover in unsprayed plantations. Some progress has been made in securing adoption by more growers of control measures. Good control of Leaf Spot was again obtained by spraying with Bordeaux Mixture at the demonstration plots at Duranbah (N.C.).

SQUIRTER (Nigrospora sphaerica) was again troublesome in the Winter and Spring of 1948 in fruit consigned to the Sydney, Melbourne and Adelaide Markets. Following the proclamation of the disease last year under the N.S.W. Plant Diseases Act, regulations were gazetted, operative from May, 1949, requiring the treatment of fruit after packing for sale in New South Wales in dilute salicylanilide or its sodium salt. Already an improvement has been noticeable in reduced incidence of Squirter, and in the market appearance of fruit owing to control of BLACK END (Gloeosporium musarum, Nigrospora sphaerica, Fusarium spp.).

CUSTARD APPLE.

LEAF SCALD, DIE-BACK AND BROWN ROT (Phytophthora sp.). A leaf spot and scald, a twig and limb die-back and a brown rot of fruit with which Phytophthora sp. is associated was recorded for the first time from Banora Point (N.C.).

MANGO.

No records.

PAPAW.

CRINKLE (Virus). This disease was general in most plantations in North Coast districts. The relationship of this disease with virus diseases of papaw reported in other countries has not yet been determined. The die-back associated with Crinkle which has previously been observed to occur during Autumn months occurred this year in December and January. It is probable that more than one virus disease affects this crop in New South Wales. Consideration is being given to the possibility of the disease which made its appearance in the Summer months being a manifestation of the Big Bud of tomato virus.

PASSIONFRUIT.

BROWN SPOT (Alternaria passiflorae) was again an important disease in unsprayed plantations. Greater attention is being given to improved spraying equipment and some leading growers in the Mangrove Mountain (C.C.) district have installed tractor-hauled multiple-nozzle boom sprayers.

LEAF and FRUIT SPOT (Septoria sp.). This disease, which was reported for the first time last year in the Metropolitan Area and the far North Coast, was present to a minor extent only.

ROOT KNOT (Heterodera marioni) was reported from Telegraph Point (C.C.). Affected vines were stunted in comparison with surrounding healthy ones. The foliage was yellowish, with a tendency for the normal dark green to be retained along the veins.

FROST INJURY (?). Specimens of almost mature fruit with spongy soft rinds were received in July, 1948, from Macksville (C.C.). Rinds became deeply crinkled and shrivelled a few days after picking. Frost injury suspected as July weather was unusually cold over most of the State.

WOODINESS (Virus). This disease is still widespread and constitutes a serious problem in the industry by shortening the productive life of plantations.

PINEAPPLE.

WILT (cause undetermined). This disease was again present in most two-year-old and older plantings in far North Coast districts.

MISCELLANEOUS FRUITS.

FIG.

LEAF SPOT (Cercospora fici) was recorded from a number of Metropolitan localities, causing severe injury and some premature defoliation following Summer rains.

GRAPES.

DOWNY MILDEW (Plasmopara viticola). Because of the dry weather of Spring and early Summer there was, at first, very little

development of Downy Mildew. A fairly heavy outbreak occurred on unsprayed vines on the Coast and M.I.A. following Summer rains. In the Orange-Molong (C.T.) districts where the season was dry no Mildew was recorded even on unsprayed vines. At Young (S.W.S.) traces were seen in the Spring, but dry weather prevented extension.

BLACK SPOT (Elsinoe ampelina) was recorded from a number of Coastal and Tableland localities on unsprayed vines. Very little Black Spot developed in the M.I.A. or Murray River settlements (W.D.).

POWDERY MILDEW (Uncinula necator) was recorded from unsprayed vines in the Metropolitan Area in late Spring. In Lower Murray vineyards, Powdery Mildew was present as usual, but was held in check by the use of sulphur dusts and gave little trouble.

MOULD (Botrytis cinerea). Showery, humid weather during late Summer and early Autumn, 4-6 weeks before the time they would normally have ripened, resulted in very heavy damage, particularly to wine grapes, at Griffith (M.I.A.). Considerable losses resulted to growers and much of the harvest was fit only for distillation. A change in the weather in late March prevented the extension of the disease in the late-maturing table grapes and losses were much lighter amongst these.

In the Lower Murray River settlements (W.D.) Heavy rain and continued high humidity at harvest resulted in the greatest loss of sultanas ever experienced in this area. Much less loss occurred of currants, which were largely picked before the rain, and of the later-maturing Gordo Blanco variety.

CROWN GALL (Agrobacterium tumefaciens). Vines in the Orange-Molong-Borenore (C.T.) districts were observed to be rather heavily infected with Crown Gall. In some vineyards 90% of the vines were affected. Treatment with sodium di-nitro-ortho cresylate-methylated spirits had proved satisfactory for the eradication of long-standing galls.

STUNT (Virus). A disease of Black Shiraz at Griffith (M.I.A.) causing stunting, poor cropping, poor growth and uneven late maturing of canes and, finally, death, has been shown to be transmissable by grafting. The disease so far is serious only in one block and a few vines have been located in two other blocks.

MOSAIC (Virus) appears to be widespread in some varieties but causes negligible reduction in vigour, except in cool Spring seasons. Vines affected last year at Pomona again showed symptoms but in a modified form.

POTASH DEFICIENCY. There is evidence to suggest that a condition shown by Hunter River Riesling grapes in the Cessnock (C.C.) district is due to a disturbance in the K/Ca ratio and not to Pierce's disease virus as was at one time suspected.

FROSTING. A mosaic-like condition shown by leaves of Doradilla from a Hanwood (M.I.A.) vineyard was found to be the result of light frosting when the leaves were young.

LIME-INDUCED CHLOROSIS was recorded from Boggabri (N.S.W.)

HORMONE SPRAY INJURY. 2, 4-D at the rate of 1 lb. to 90 gallons of water used as a weed-killer near dormant grapes at Grafton (N.C.) during Autumn, 1948, resulted in abnormal shoot growth in the following season. Leaves were spoon-shaped,

fringed at the apex and showed prominent vein clearing. Rather similar symptoms followed the use of 2, 4-D at the rate of 1 part in 100,000 sprayed on to flower clusters in an attempt to reduce blossom fall in Ohanez variety at Griffith (M.I.A.) in Spring, 1948.

LOQUAT.

No record.

MULBERRY.

LEAF SPOT (Septogloeum mori) was recorded in a number of instances, but infection was nowhere severe.

LEAF SPOT (Pseudomonas mori) was recorded at Barlow (S.W.S.).

OLIVE.

ROOT AND CROWN ROT (Phytophthora cinnamomi) was recorded on nursery stock at Wagga (S.W.S.).

PERSIMMON.

LEAF SPOT (Gloeosporium diospyri) was again recorded in the Metropolitan Area.

STRAWBERRIES.

CRINKLE (Virus) is present in mild or severe form in all New South Wales commercial varieties.

YELLOW EDGE (Virus) was recorded on the Phenomenal and Mason's Immense varieties at Carlingford (M.A.).

LEAF DISEASES: SPOT (Mycosphaerella fragariae), SCORCH (Diplocarpon earliana) and BLIGHT (Dendrophoma obscurans) were prevalent on Coastal and Tableland crops during late Summer and Autumn. An interesting occurrence of Blight was noted on the Phenomenal and Weston varieties. These do not normally show leaf lesions, but following showery, humid Summer weather a very severe cankering of petioles and stolons was found to be due to this fungus.

POWDERY MILDEW (Sphaerotheca humuli). This disease, though prevalent in Victoria and Tasmania has not previously been seen in New South Wales. (The record in Plant Disease Check List Supplement 2 was based on imported material grown in quarantine and subsequently destroyed). In March, 1949, an isolated crop of Richmond Red at Ebenezer (M.A.) showed general and rather heavy infection. The origin of the outbreak could not be traced.

FRUIT ROT (Phytophthora sp.) was recorded for the first time in New South Wales from a Metropolitan garden in December, 1948.

ROOT ROT (Rhizoctonia solani) was responsible for the almost complete failure of a crop of Richmond Red variety at West Pennant Hills (M.A.). Plants obtained from an uninfected

source remained healthy though grown adjacent to infected beds. Slight losses were recorded from several outer Metropolitan districts.

WALNUT.

BACTERIAL BLIGHT (Xanthomonas juglandis) was recorded at Glen Innes (N.T.) and at Wagga (S.W.S.).

FROST caused extensive damage to walnut trees on the Northern Tablelands, resulting in complete loss of crop in some instances.

ORNAMENTALS.

ACHIMENES.

POWDERY MILDEW (Oidium sp.) was recorded for the first time in New South Wales on this host from the Sydney Botanic Gardens.

ANTHURIUM.

SPOTTED WILT (Virus) was recorded for the first time on this host in N.S.W. from the Metropolitan Area.

ANTHIRRHINUM.

SHOT HOLE BLIGHT (Heteropatella antirrhini) was responsible for the complete failure of 2 large commercial crops in the Metropolitan Area and was also recorded from a number of home gardens in the Spring and Autumn.

WILT (Verticillium dahliae) was recorded from several Metropolitan sources.

BACTERIAL LEAF SPOT (Xanthomonas sp.), which has not been seen for several years, caused severe injury to seedlings in a Metropolitan nursery.

DOWNY MILDEW (Peronospora antirrhini) was recorded causing a moderate amount of loss in a South Coast nursery.

ARABIS BLEPHAROPHYLLA.

WHITE RUST (Cystopus candida) was recorded for the first time in N.S.W. on this host from a Metropolitan locality.

ASTER.

GREENING (Virus) was reported from a number of Metropolitan and Western sources during late Summer.

COLLAR ROT (Rhizoctonia solani) was recorded as the cause of death of about 5% of the plants in flower crops at Milperra and Matraville (M.A.).

SPOTTED WILT (Virus) was of negligible importance.

LEAF SPOT (Phyllocticta asteris) was recorded for the first time in N.S.W. on this host from a Carlingford (M.A.) flower crop.

AZALEA.

CHLOROSIS (Insufficiently acid soil) was recorded from a number of Metropolitan nurseries and home gardens.

ROOT ROT (Rhizoctonia solani) caused losses among rooted cuttings in a Kurrajong (C.T.) nursery during warm weather in late Spring.

LEAF GALL (Exobasidium vacinii) was reported on susceptible varieties from a few Metropolitan gardens.

SHOOT AND LEAF BLIGHT (Phytophthora cinnamomi) was recorded for the first time in N.S.W. on this host, causing a blight of seedling Azalea mollis in a Metropolitan garden.

BEGONIA, TUBEROUS.

SPOTTED WILT (Virus). About 20% infection was observed in a Metropolitan crop in early Summer.

BIRCH.

LEAF SPOTS (Gloeosporium betularum and Cylindrosporium betulae) again caused premature defoliation of birches at Moss Vale (S.C.) and in the Metropolitan Area.

BRACHYCHITON ACERIFOLIA.

LEAF SPOT (Phyllosticta sp.) was recorded for the first time in N.S.W. on this host from Yanco (M.I.A.).

BRUSH BOX (Tristania conferta).

LEAF SPOT (Cercospora sp.) was recorded for the first time in N.S.W. on this host from a number of Metropolitan localities during late Summer. Considerable disfigurement of older leaves was caused.

CALENDULA.

RUST (Puccinia distincta) was prevalent as usual.

GREENING (Virus) was recorded for the first time on this host from a number of Metropolitan localities.

LEAF SPOT (Entyloma calendulae) was recorded from a Metropolitan source.

CALLA.

SOFT ROT (Pseudomonas aroideae) was recorded from several Metropolitan nurseries.

CAMELLIA.

VIRUS (? Spotted Wilt) was widespread as usual.

CARNATION.

COLLAR ROT (Rhizoctonia solani) was particularly severe in early Autumn following a period of rain and humid heat. A number of Metropolitan growers suffered very heavy losses.

LEAF SPOT (Septoria dianthi) and RUST (Uromyces caryophyllinus) were prevalent.

ROOT KNOT (Heterodera marioni) was very prevalent.

MOSAIC (Virus) was widespread in older varieties.

CHAMAELAUCIUM UNCINATUM.

ROOT ROT (Phytophthora cinnamomi) was recorded from several Metropolitan gardens.

CHRYSANTHEMUM.

LEAF NEMATODE (Aphelenchoides ritzema-bosi) again caused heavy losses of susceptible varieties. Showery humid weather in March favoured its rapid development in the Autumn. E.605 at 1 in 800 shows promise as a foliage spray.

RUST (Puccinia chrysanthemi) and LEAF SPOT (Septoria chrysanthemella) were also prevalent on susceptible varieties and caused some loss.

POWDERY MILDEW (Oidium sp.) was recorded on late crops in the Metropolitan Area.

STUNT (Virus) was observed in several Metropolitan crops.

SPOTTED WILT (Virus) was recorded from a Metropolitan source.

CYMBIDIUM.

LEAF SPOT (Colletotrichum orchidacearum) was recorded from a number of Metropolitan gardens.

MOSAIC (Virus) was fairly prevalent as usual.

CYPRESS, MONTEREY. (Cupressus macrocarpa).

DIE-BACK (Coryneum cardinale) was recorded for the first time in N.S.W. causing die-back and death of wind-breaks and individual trees at Orange and Oberon (C.T.). It is believed that the disease has been present for many years and has been responsible for the lack of popularity of this tree.

DAFFODIL.

BASAL ROT (Fusarium bulbigenum) was recorded from commercial crops at Robertson (S.C.) and the Metropolitan Area.

MOSAIC (Virus) was prevalent as usual.

NEMATODE (Anguillulina dipsaci) was recorded from Mittagong (S.C.).

DAHLIA.

MOSAIC (? Cucumber mosaic virus) was widespread and many records were received of stunting and leaf distortion of early growth in the late Spring.

SPOTTED WILT (Virus) was prevalent as usual.

POWDERY MILDEW (Oidium sp.) was widespread towards the end of the season.

LEAF SPOT (Entyloma dahliae) was recorded from a number of Metropolitan nurseries and gardens.

ROOT KNOT (Heterodera marioni). Heavy infection was responsible for wilting in a Dubbo (C.W.S.) crop. It was also recorded from several Metropolitan localities.

DAISY, EASTER.

GREENING (Big Bud virus) was recorded from Harden (S.W.S.).

DAPHNE.

COLLAR ROT (Phytophthora parasitica and Sclerotium rolfsii) were recorded from several Metropolitan sources.

MOSAIC (Virus) was prevalent as usual on D. indica.

LEAF BLIGHT (Phytophthora parasitica) was responsible for the loss of a number of rooted cuttings in a Metropolitan nursery following humid summer weather.

DELPHINIUM.

CROWN ROT (Sclerotium rolfsii) was recorded in February from several Metropolitan sources.

LEAF SPOT (Diplodina sp.) was recorded from Berrima and the Metropolitan Area.

POWDERY MILDEW (Erysiphe polygoni) was recorded from a number of Metropolitan gardens.

MOSAIC (Virus) was recorded from a Metropolitan nursery.

DUTCHMAN'S PIPE (Aristolochia elegans).

SPOTTED WILT (Virus) was recorded for the first time on this host from a Metropolitan garden.

ELM.

DIE-BACK (Cytospora sp. associated) was observed causing considerable injury to street trees at Canberra and Bungendore (S.T.) in early Autumn.

FREESIA.

DRY ROT (Sclerotinia gladioli) caused very heavy losses in crops at Robertson (S.T.) and Carlingford (M.A.) and was recorded from several Metropolitan gardens.

MOSAIC (Virus) was recorded from a Metropolitan garden.

GARDENIA.

BUD DROP (Nutritional) was prevalent in the Metropolitan Area.

LEAF YELLOWING (? potassium deficiency) was recorded from Metropolitan gardens.

GERANIUM.

RUST (Puccinia pelargonii-zonalis) was prevalent as usual.

GERBERA.

LEAF SPOTS (Cercospora sp. and Septoria sp.) were prevalent in Coastal gardens following early Autumn rains.

CROWN ROT (Phytophthora sp.) was recorded from several Metropolitan nurseries and gardens following Summer rains.

WILT (Verticillium dahliae) was recorded from Richmond (M.A.) and Metropolitan gardens in Spring and late Autumn.

GREENING (Big Bud virus) was recorded from several Metropolitan localities in late Spring.

GLADIOLUS.

CORE AND NECK ROT and LEAF AND FLOWER SPOTTING (Botrytis sp.). Late Summer and Autumn crops again suffered heavy damage on the Coast and Tablelands.

DRY ROT and NECK ROT (Sclerotinia gladioli) was again an important source of loss to growers in all parts of the State. Canberra city (S.T.) gardens are reported to have suffered especially heavy damage.

MOSAIC (? Yellow bean mosaic) is widespread in all older varieties but causes negligible damage.

SCAB (Pseudomonas marginata) was fairly general but not severe.

GYPSOPHILA.

GREENING (Big Bud virus) was recorded from a Metropolitan locality in early Spring.

HELICHRYSUM.

WILT (Verticillium dahliae) was recorded for the first time in N.S.W. on this host in a Dundas (M.A.) nursery, causing 50% loss of plants in a seed crop during early Spring.

HOLLYHOCK.

RUST (Puccinia malvacearum) was prevalent as usual.

HYACINTH.

NEMATODE (Anguillulina dipsaci) was reported in a crop at Mittagong (S.C.).

HYDRANGEA.

CHLOROSIS (soil not sufficiently acid) was recorded from several Metropolitan gardens.

POWDERY MILDEW (Oidium sp.) was not so prevalent as usual.

IRIS.

LEAF SPOT (Heterosporium gracile). Following Summer and Autumn rains a heavy development of Leaf Spot took place on rhizomatous iris in Metropolitan gardens.

MOSAIC (Virus) was recorded on Dutch Iris from a number of Metropolitan gardens.

LABURNUM (L. vulgare).

LEAF SPOT (Ceratophorum setosum) was recorded for the first time in N.S.W. from a Wentworth Falls (C.T.) garden.

LAGERSTROEMIA.

POWDERY MILDEW (Uncinula australiana) was general and severe throughout the late Spring and Summer on the Coast, and was reported to be serious in the Bathurst (C.T.) district and at Yanco (M.I.A.).

LASIANDRA.

ROOT ROT (Armillaria mellea) was recorded for the first time on this host in N.S.W. from Nowra (S.C.).

LILY.

LEAF SPOT (Botrytis elliptica) was recorded for the first time in N.S.W., causing considerable damage to a commercial crop of Madonna lilies at Mt. Wilson (C.T.).

BULB SCALE ROT (Rhizoctonia solani) was recorded from several Metropolitan nurseries in Summer following warm humid conditions on L. speciosum, L. tigrinum and L. philippense.

ROOT ROT (Phytophthora cinnamomi) was recorded on L. philippense in a Metropolitan nursery, causing considerable loss following Summer rains.

MOSAIC (Virus) was widespread as usual.

LILAC.

LEAF SPOT (Phyllosticta sp.) was recorded for the first time in N.S.W. from Wentworth Falls (C.T.) and Metropolitan sources following Summer rains.

LUCULIA.

SHOOT BLIGHT (Phytophthora sp.) was recorded for the first time in N.S.W. from a Metropolitan nursery following warm humid conditions during March. The disease was readily controlled by spraying with copper oxychloride.

MAPLE, JAPANESE.

DIE-BACK (Verticillium dahliae) was recorded from Leura and Wentworth Falls (C.T.) and the Metropolitan Area.

MIGNONETTE.

MOSAIC (? Cucumber mosaic). About 60% of a commercial crop at Wyong (C.C.) was affected. A similar disease was recorded from this locality two years ago but has not been seen elsewhere.

NASTURTIUM.

LEAF SPOT (Heterosporium tropaeoli). Because of dry conditions during early Spring practically no development of this disease took place in localities where it had been recorded last season.

SPOTTED WILT (Virus) was common as usual.

MOSAIC (Virus) was recorded from one Metropolitan locality.

NERINE.

ROOT ROT (Phytophthora sp.) and MOSAIC (Virus) were recorded for the first time on this host in N.S.W. from a Metropolitan garden.

NIEREMBERGIA.

COLLAR ROT (Rhizoctonia solani) was recorded for the first time in N.S.W. on this host from Nowra (S.C.).

RAPHIOLEPIS INDICA.

FRECKLE (Fabraea maculata) was recorded from Bowral (S.C.).

PANSY.

LEAF SPOT (Cercospora sp.) was recorded, causing fairly heavy infection in a Metropolitan garden and at Wollongong (S.C.).

PEARL WORT (Sagina procumbens).

ROOT ROT AND DAMPING OFF (Rhizoctonia solani) was recorded for the first time on this host in N.S.W. from a Metropolitan locality.

PETUNIA.

ROOT KNOT (Heterodera marioni) and COLLAR ROT (Rhizoctonia solani) were recorded from the Metropolitan Area.

PLANE.

DIE-BACK (Gnomonia veneta) was recorded from Bowral (S.C.), Blackheath (C.T.) and Kurrajong (C.T.).

PHLOX.

LEAF SPOT (Septoria divaricata) caused severe blighting of P. drummondii in Metropolitan gardens following January rains.

GREENING (Big Bud virus) was recorded from a number of Metropolitan localities on P. divaricata, and from Emmaville (N.T.) and Leeton (M.I.A.).

BORON TOXICITY. Symptoms suggestive of this trouble developed on P. divaricata at Holbrook (S.W.S.).

PHOTINIA SERRULATA.

POWDERY MILDEW (Oidium sp.) was recorded in the Metropolitan Area.

PINCUSHION. (Scabiosa sp.)

DOWNY MILDEW (Peronospora knautiae) was recorded for the first time in N.S.W. from a Metropolitan garden.

PRIMROSE.

LEAF SPOT (Ramularia primulae) was recorded at Wagga (S.W.S.), causing a moderate amount of infection.

POPPY, ICELAND.

DOWNY MILDEW (Peronospora arborescens). General but light infection was observed in a crop at Bosley Park (M.A.) during early Spring. Damage was slight. It was also recorded in several commercial crops during Winter, 1949, following rain in early June.

SPOTTED WILT (Virus). There were very few reports of infection in Metropolitan crops.

DEFICIENCY. Symptoms suggestive of molybdenum deficiency were reported in crops at Bosley Park and Harbord (M.A.).

PYRACANTHA COCCINEA Var. LALANDEI.

BLACK SPOT (Venturia pyracanthae) was reported to have caused serious disfigurement of berries in the Cooma district (S.T.). It was also reported from Canberra (A.C.T.) and Carlingford (M.A.).

RANUNCULUS.

MOSAIC (Virus) was prevalent in home gardens and was noted in a number of commercial crops in the Metropolitan Area, causing deterioration in vigour.

RHODANTHE.

WILT (Verticillium dahliae) was recorded for the first time in N.S.W. on this host, causing 90% loss of plants in a seed crop in a Dundas (M.A.) nursery during early Spring.

ROSE.

POWDERY MILDEW (Sphaerotheca pannosa) was general on Coast and Tablelands and in the M.I.A. during Summer and Autumn.

BLACK SPOT (Diplocarpon rosae) developed strongly following Summer rains and was responsible for much premature defoliation on Coast and Tablelands. It was recorded also from Merriwa (C.T.) and Leeton (M.I.A.).

ANTHRACNOSE (Sphaceloma rosarum) was recorded from a number of Metropolitan and Tableland localities.

ROSE WILT (Virus) was recorded from Bowral (S.C.).

MOSAIC (Virus) is believed to be responsible for the degeneration in vigour of some popular florists' varieties, particularly E.G. Hill, in commercial crops in the Carlingford district (M.A.), and in home gardens in the Metropolitan Area.

SAINTPAULLIA IONENSIS.

SPOTTED WILT (Virus) was recorded for the first time in N.S.W. on this host from a Carlingford (M.A.) nursery.

SAPONARIA.

LEAF SPOT (Alternaria sp.) caused very severe damage to a commercial crop at Terry Hills (M.A.) during late Spring.

STATICE.

SPOTTED WILT (Virus) was recorded from Wyong (C.C.) and the Metropolitan Area, and Tamworth (N.T.).

STOCK.

BLACK ROT (Xanthomonas incanae) was again a serious source of loss in Metropolitan crops grown from untreated seed. Heavy rain in January and hot humid conditions in February favoured the development of the disease.

MOSAIC (Virus) was recorded from several Metropolitan crops.

ROOT ROT (Rhizoctonia solani) was recorded from a Metropolitan crop.

BACTERIAL ROT (Pseudomonas matthioli). A bacterial rot indistinguishable on symptoms from that produced by X. incanae was received from Canberra (S.T.). Unlike the Black Rot common in N.S.W. this disease was very severe under cold conditions during early Spring. Seed transmission was suspected.

STOKESIA CYANEA.

CROWN ROT (Sclerotium rolfsii) was recorded for the first time on this host in N.S.W. from a Metropolitan garden.

SWEET PEA.

ROOT ROT (Pythium sp., Rhizoctonia solani, Fusarium sp.) was rather prevalent during Winter, 1949.

POWDERY MILDEW (Erysiphe polygoni) was recorded from a number of Metropolitan crops in Spring, 1948, and Summer, 1949.

SPOTTED WILT (Virus) was responsible for the complete failure of crops in the Prospect (M.A.) district planted between January and May. This district is always noted for the high percentage of Spotted Wilt occurring in tomato crops but the damage to sweet peas has not previously been so severe.

SWEET WILLIAM.

GREENING (Virus) was recorded for the first time on this host in N.S.W. from a Metropolitan source.

COLLAR ROT (Rhizoctonia solani) was fairly prevalent in Metropolitan gardens during late Summer.

VIOLET.

SCAB (Sphaceloma violae). A severe outbreak occurred in crops in the Metropolitan and Tableland areas following early Summer rains.

SPOTTED WILT (Virus) was recorded in a crop at Yanderra (S.C.).

LIME-INDUCED CHLOROSIS was recorded from Boggabri (N.W.P.).

WALL FLOWER, SIBERIAN (Erysimum asperum).

CLUB ROOT (Plasmodiophora brassicae) was recorded for the first time in N.S.W. on this host in a Dundas (M.A.) nursery. An infected crop of candytufts had grown in the soil seven years previously.

ZINNIA.

POWDERY MILDEW (Oidium sp.) was particularly prevalent during Summer and Autumn in Metropolitan gardens.

BACTERIAL LEAF SPOT (Bacterium sp.). A severe type of seedling Leaf Spot due to a bacterial agency was recorded for the first time in N.S.W. on this host from a Metropolitan garden.

VEGETABLES.

ASPARAGUS.

No records.

BEAN.

The seed certification scheme was continued for the sixth successive season. A total of 926 acres (174 separate crops) was inspected and 538 acres (105 crops) were passed for certification. An additional 6 small crops were "approved" as up to certification standard. After allowing for harvesting losses due to wet weather and other causes, it is expected that somewhat over 5,000 bushels of seed will be certified. About 67% of this will be Brown Beauty, 20% Hawkesbury Wonder, and the remaining 13% will consist of the varieties Tweed Wonder, Wellington Wonder, Landreth Stringless Greenpod, New Zealand Stringless Greenpod and Refugee No. 5.

HALO BLIGHT (Pseudomonas phaseolicola). The seed certification scheme continues to give satisfactory control of this disease. In certification inspections of seed crops on the South Coast, only 8 crops out of a total of 174 crops were rejected because of the presence of this disease (an additional 55 crops were rejected for other reasons). A number of cases of severe infection were reported from the Central Coast where uncertified Wellington Wonder and Brown Beauty seed was used.

AMERICAN COMMON BLIGHT (Xanthomonas phaseoli). Apart from navy beans (see separate section), this disease was recorded in six crops during the year. Three of these were South Coast seed crops.

BACTERIAL BROWN SPOT (Pseudomonas syringae). There were again many records of this disease, but it was less in evidence in South Coast seed crops than in the preceding year.

ANTHRACNOSE (Colletotrichum lindemuthianum). Another wet season during the Summer and Autumn months again favoured the development and spread of this disease. Anthracnose was responsible for 16 crop rejections of seed crops on the South Coast. Some complete crop losses were sustained in the Central Coast area on crops of the variety Landreth grown under contract to canning firms. Experience during the past two seasons indicates that trace infection is more difficult to eradicate in the certification scheme in the case of Anthracnose than of Halo Blight. There is some evidence suggesting that soil carry-over may be of importance in causing trace infection with Anthracnose.

ANGULAR LEAF SPOT (Isariopsis griseola). This disease was again the most important disease in South Coast seed crops, many crops of Dwarf French beans showing 100% infection. Early planted crops, however, were relatively free from the disease which was difficult to find on the South Coast before mid-January. From then onwards, however, the incidence and severity of the disease increased rapidly.

MOSAIC (Virus). A severe infestation of aphids during the Spring months resulted in a very high incidence of Mosaic in Coastal crops planted during September and October. Crops planted from June to August and from November onwards were much less severely affected. Many crops planted in September and October were complete failures because of the combined effect of aphid injury and Mosaic infection. In some cases spread of Mosaic was materially reduced by the application of insecticidal sprays.

SCLEROTINIA ROT (Sclerotinia sclerotiorum). Severe infection was present in North Coast beans received at the Sydney Markets during the last two months of September. This infection apparently developed following heavy falls of rain in early and mid-September. The disease was recorded in several crops on the Central Coast and in beans received in Sydney from the North Coast during the Autumn months of 1949, but infection was much less severe than in the Autumn of 1947.

MOTTLE LEAF (Non-parasitic). This condition was again evident in all crops on Tweed Wonder and Canadian Wonder. From 5% to 10% of the plants were affected in most crops of these varieties.

RUST (Uromyces phaseoli typica). As usual, this disease was of common occurrence in crops of the variety Epicure. During the year, Rust was found on three dwarf bean crops of the varieties Tweed Wonder, Brown Beauty and Wellington Wonder grown in the Gosford district (C.C.). The severity of the infection on these varieties, which are resistant to the Rust normally occurring on Epicure and other climbing varieties, suggested that it was probably a new strain of Rust. This was confirmed by Professor Waterhouse of the University of Sydney, to whom specimens of affected plants were submitted. The same strain of Rust was subsequently found on dwarf French beans at Richmond (M.A.).

FUSARIUM ROOT ROTS and WILTS (Fusarium sp.). These diseases were present in many crops.

RHIZOCTONIA STEM CANKER AND ROOT ROT (Rhizoctonia solani). Several records but no reports of serious losses in commercial crops.

PYTHIUM WILT (Pythium aphanidermatum). This disease was again recorded as causing severe losses in crops of stringless beans grown on the Murrumbidgee Irrigation Area. It has not yet been recorded elsewhere in this State.

SCLEROTIUM ROT (Sclerotium rolfsii). Recorded from the Gosford district (C.C.).

ROOT KNOT (Heterodera marioni). Several records.

PHYLLOSTICTA LEAF SPOT (Phyllosticta sp.). One record from Sydney Metropolitan Area.

SCALD (Non-parasitic). Two crops in the Gosford district (C.C.) were observed to be affected with Scald. Evidence has been obtained that this is a molybdenum deficiency disease and that the disease develops only when seed, produced on acid soils low in available molybdenum, is planted again in similar acid soils.

MAGNESIUM DEFICIENCY (?). One suspected case of magnesium deficiency was recorded from the Gosford district (C.C.)

PRE-EMERGENCE DAMPING OFF (Fungal infection?). Several records in home gardens.

RUSSET (Cladosporium sp.?). Several specimens of pods affected with this condition were observed during the year at the Sydney Municipal Markets on beans from Queensland, the Far North Coast and the Far South Coast. A species of fungus belonging to the genus Cladosporium was isolated and, when inoculated into bean pods, produced symptoms identical with those on the samples submitted. The condition has occurred only on beans transported a considerable distance to market, suggesting that the disease develops in transit.

BEAN, BROAD.

CHOCOLATE SPOT (Botrytis sp.). Two records - from Bowral (Southern Highlands) and Sydney Metropolitan Area.

RUST (Uromyces fabae). Recorded from Sydney Metropolitan Area.

VASCULAR WILT VIRUS. Two specimens were received from the Sydney Metropolitan Area with symptoms suggestive of the Vascular Wilt virus which has been described in Victoria.

BEAN, NAVY OR FIELD.

AMERICAN COMMON BLIGHT (Xanthomonas phaseoli). This disease was again the most important disease of navy beans on the Northern Tablelands. Two seed crops grown on the South Coast were apparently free of this disease. Three crops were grown on the Northern Tablelands from Small White seed produced in the 1947-48 season on the South Coast. Two of these three crops were apparently free from the disease, whilst trace infection with American Common Blight was found in the other crop. It is expected that, in the 1949-50 season, a considerable proportion of the Northern Tablelands area of navy beans will be planted with seed harvested from crops apparently free from the disease.

BEET AND SILVER BEET.

CERCOSPORA LEAF SPOT (Cercospora beticola). Several records on both silver beet and table beet.

EXCESSIVE PIGMENTATION OF LEAVES (Cause undetermined). Specimens of table beet were received from Wilde's Meadow (S.T.) showing excessive purple pigmentation in the leaves. The grower stated that such plants, scattered at random through the crop, failed to make satisfactory growth in comparison with plants on which the leaves were green. The condition was suggestive of a virus disease, although subsequently the grower reported that affected plants responded favourably to applications of super-phosphate and sulphate of ammonia.

MOLYBDENUM DEFICIENCY (?). A crop of silver beet was observed, in May, 1949, at Horsley (M.A.), with symptoms suggestive of molybdenum deficiency. The leaf colour was a pale green instead of a dark healthy green, and the intervenal areas on some plants gave strongly positive tests with diphenylamine-sulphuric acid. An adjacent crop of cauliflowers was severely affected with whiptail.

CAPE GOOSEBERRY.

No records.

CARROT.

CARROT VIRUS. Several records from Central Coast area.

ROOT KNOT (Heterodera marioni). Several records.

RHIZOCTONIA ROOT ROT (Rhizoctonia solani). One record from the Metropolitan Area.

CELERY.

LATE BLIGHT (Septoria apii-graveolentis). Several records.

SCLEROTINIA ROT (Sclerotinia sclerotiorum). One record from Windsor (M.A.).

INTERNAL STEM BROWNING (Cause undetermined). A condition in which the internal tissue of the outer stems showed a brown discolouration and the tips of the inner stalks were affected with a soft rot was recorded from Windsor (M.A.).

CRUCIFERS.

RING SPOT (Mycosphaerella brassicicola). This disease was again responsible for severe leaf spotting in the Moss Vale-Robertson area (S.C.). No really effective control measures are available.

BLACK ROT (Xanthomonas campestris). Several records on cauliflower, cabbage and broccoli but, as in the preceding season, no reports of serious crop losses were received.

WHIPTAIL (Molybdenum deficiency). Many reports from the Central Coast area in these crops where molybdenum compounds were not used. Very satisfactory control continues to be secured by the use of sodium molybdate or ammonium molybdate. An application of an aqueous solution of one of these chemicals to the plants in the seed-bed, about a week before transplanting, appears to be the easiest method of controlling the disease.

DOWNY MILDEW (Peronospora parasitica). This disease was again of common occurrence on cabbage, cauliflower and broccoli, especially in the seed-bed.

CLUB ROOT (Plasmodiophora brassicae). Three records from the Sydney Metropolitan Area - one each on cabbage, cauliflower and broccoli.

SCLEROTINIA ROT (Sclerotinia sclerotiorum). Recorded on cabbage and cauliflower in the Sydney Metropolitan Area and on cauliflower in the Murrumbidgee Irrigation Area.

DAMPING OFF and WIRE STEM (Rhizoctonia solani). Several records.

BLACK LEG (Phoma lingam). One record from Yetholme (C.T.) on Brussel's sprouts.

ALTERNARIA LEAF SPOTS (Alternaria brassicae and A. herculea). Several records but no reports of serious losses.

MOSAIC (Virus). Recorded on cauliflowers in the Metropolitan Area.

PEPPERY LEAF SPOT (Pseudomonas maculicola). One record from the Metropolitan Area.

BLACK ROOT OF RADISH (Aphanomyces raphani). One record from the Metropolitan Area.

ROOT KNOT (Heterodera marioni). Two records - on cauliflower and radish.

LEAF YELLOWING and STUNTING (Cause undetermined). Recorded from Ebenezer (M.A.).

FROST INJURY (non-parasitic). Reported from Central Coast area on cabbage during July, 1948, and on cauliflower during May, 1949.

GREY MOULD ROT (Botrytis cinerea). One record on Brussels sprouts from Yetholme (C.T.).

BROWN HEART (Boron deficiency?). This condition was observed on swede turnips from Glen Innes and Walcha (N.T.).

CUCURBITS.

DOWNY MILDEW (Perenoplasmophora cubensis). A 100% infection of cucumbers was recorded in crops in the Moruya-Bodalla area (S.C.).

POWDERY MILDEW (Erysiphe cichoracearum). Several records of this disease throughout the State.

YELLOWS (Molybdenum deficiency). The condition was recorded at Wetherill Park (M.A.) and responses were secured with applications of sodium molybdate at 1/3rd gram per hill, and also with applications down to 0.01 gram per hill.

ANTHRACNOSE (Colletotrichum legenarium). TThis disease was recorded on rockmelons and watermelons at Menai (C.C.).

SOFT ROT (Phoma sp. associated). A soft rot of squash fruits, with which Phoma was associated, was recorded from Lithgow (C.T.).

FUSARIUM WILT (Fusarium niveum). One record on watermelon from Albury (S.W.S.).

SEPTORIA LEAF SPOT (Septoria cucurbitacearum). One record on pumpkin from Bega (S.C.).

ROOT KNOT (Heterodera marioni) was widespread.

D.D.T. BURN (Non-parasitic). Recorded on pumpkins, rockmelons and squashes at Yanco Experiment Farm (M.I.A.). The damage was not enough to kill the plants and they later made vigorous growth.

LETTUCE.

SPOTTED WILT (Virus). Many records during the year and, although a few cases of severe infection came to notice, the disease appeared to be of less importance than during the preceding two years.

SOFT ROTS (Bacteria associated). Several records during the past year. The variety Great Lakes appears to be more resistant than Imperial 847.

DOWNY MILDEW (Bremia lactucae). This disease was again common and widespread, though infection was usually confined to the outer leaves.

SCLEROTINIA ROT (Sclerotinia sclerotiorum). Several records from the Metropolitan Area.

SEPTORIA SPOT (Septoria lactucae). One record from Binnaway (N.C.P.).

MOLYBDENUM DEFICIENCY. Plants showing yellowing and stunting at Wetherill Park (M.A.) responded to applications of sodium molybdate or ammonium molybdate. Three other cases of suspected molybdenum deficiency of lettuce growing in acid soils were recorded during the past year.

ONION.

DOWNY MILDEW (Peronospora destructor). Reported from Central Coast and Southern Tablelands. The disease was reported to be serious in irrigated crops in the Maitland district.

SMUDGE (Colletotrichum circinans). One record from the Metropolitan Area.

PURPLE BLOTCH (Alternaria porri). One record from Dubbo (C.W.S.).

PARSNIP.

ROOT KNOT (Heterodera marioni). Several records.

PEA.

POD AND LEAF SPOT DISEASES (Mycosphaerella pinodes, Ascochyta pisi) and ASCOCHYTA FOOT ROT (Ascochyta pinodella). The incidence of these diseases was low during the past year in comparison with the previous year. MYCOSPHAERELLA was recorded in the Metropolitan Area and from Gosford (C.C.). FOOT ROT was recorded from Glen Innes (N.T.) and POD and LEAF SPOT from the inner and outer Metropolitan Area.

BACTERIAL BLIGHT (Pseudomonas pisi) was recorded from Kelso (C.T.), Goulburn (S.T.) and Leeton (M.I.A.).

POWDERY MILDEW (Erysiphe polygoni). One record from Glen Innes (N.T.).

FUSARIUM WILT (Fusarium othoceras var. pisi). One record from the Metropolitan Area.

ROOT ROT (Rhizoctonia solani) was recorded from Bankstown (M.A.).

POTATO.

LEAF ROLL (Virus). This disease was responsible for the rejection of 18.7% of the total acreage inspected for certification on the Central Tablelands, 26% on the Southern Tablelands and 30% on the Northern Tablelands. All varieties grown for certification were involved.

EARLY BLIGHT (Alternaria solani) was present in all the Tableland potato-producing areas and contributed to a general decrease in yield. In some areas of the Central Tablelands the attack was severe.

COMMON SCAB (Actinomyces scabies). This disease was recorded in the Orange district (C.T.) where there were some severe attacks of soil-borne Scab. It was also recorded from several other localities in the State.

RHIZOCTONIA DISEASE (Rhizoctonia solani). There were severe attacks of this disease in the Orange district (C.T.) where the disease was general. It was also recorded from Carramar (M.A.).

BLACK LEG (Bacterium phytophthorum). This disease was present on the Northern and Southern Tablelands and was responsible for rejection of some crops from certification in the latter area.

FUSARIUM WILTS and TUBER ROTS (Fusarium spp.). Recorded from Glen Innes (N.T.), Orange (C.T.), Gullen and Taralga (S.T.) and Milton (S.C.).

EELWORM (Heterodera marioni). Recorded from Glen Innes (N.T.) and Harbord (M.A.).

BROWN ROT (Bacterium solanacearum). Recorded from Mullumbimby (N.C.) and Ashbury and Windsor (M.A.).

LATE BLIGHT (Phytophthora infestans). Recorded from Walcha (N.T.) and the Metropolitan Area. Total losses from this disease during the past season were almost negligible in comparison with those sustained in the 1947-48 season.

SPOTTED WILT (Virus). One plant was observed with this disease during inspection of Southern Tableland crops. This is in marked contrast with the very severe infection recorded in the 1946-47 season.

SPINDLE TUBER (Virus). One record from Taralga (S.T.).

FLECK (Cause undetermined). The condition was recorded on one plant from Orange (C.T.) and light infection was observed in experimental plots on the Northern Tablelands.

RHUBARB.

DOWNY MILDEW (Peronospora jaapiana). Several records.

SWEET POTATO.

No records.

TOMATO.

SPOTTED WILT (Virus). Spotted Wilt was less prevalent during the Spring and early Summer months than usual. Greatest losses were experienced during November and the first fortnight of December. Even in areas where the incidence of the disease is normally of the order of 70 to 100%, infection was below 50% and often below 10% when D.D.T. was applied to the plants at weekly intervals. Losses were insignificant on the North Coast where the virus has never been of any importance.

Some losses occurred at Mudgee and Gulgong (C.T.). This constitutes a new record of an important outbreak in these localities.

EARLY BLIGHT (Alternaria solani). In general this disease was less severe throughout the State this year. Stem lesions were rarely encountered, while in most crops leaf and fruit attack were at a minimum. Individual crops in the Metropolitan Area were severely defoliated and on these properties fruit infection of from 10 to 20% was experienced.

Small and numerous lesions were again a characteristic of the disease on infected plants.

FUSARIUM WILT (Fusarium oxysporum f. lycopersicum). From 5 to 10% losses occurred in glasshouses where the only varieties grown are susceptible to Fusarium. In the Coff's Harbour-Boambee-Bonville area (N.C.), 2 to 5% infection was common even on land virgin to tomatoes. Growers state that even 12 years rotation is ineffective in eliminating Fusarium in that area. Losses were light, trace to 5% infection in the M.I.A., though in one "sick" soil a 30% destruction of "Tatura Dwarf" occurred. Elsewhere losses were 5% or less of susceptible varieties, and less where resistant varieties were grown. The variety Grosse Lisse again showed good field resistance and, in one mixed planting, thrived while plants of Rouge de Marmande wilted and died.

BACTERIAL CANKER (Corynebacterium michiganense) was more prevalent this season than during the past few years. Isolated crops were seriously affected in the Metropolitan Area and trace infections were present on many other properties. The disease caused considerable damage in the Cowra district (C.T.), all inspected crops being infected; it may have been introduced to this area in seeds of the variety, Bounty. The disease was not observed in the M.I.A. where all seeds were soaked in 0.6% acetic acid and dusted with Ceresan (1875A). Trace infections were recorded from most inland areas.

Specimens of Solanum opacum growing in several infected tomato crops were unsuccessfully examined for the presence of Corynebacterium michiganense.

BACTERIAL SPOT (Xanthomonas vesicatoria) was prevalent throughout the State. On the North Coast where stormy weather was prevalent in the Spring, the disease occurred in epiphytotic proportions, causing severe defoliation and disfiguring the fruit: Because of this and other reasons, the fruit marketed was only 25% of peak production. In the Metropolitan Area losses were severe on some properties until mid-December, after which the disease became less evident until the end of February.

LEAF MOULD (Cladosporium fulvum). As usual this disease was of importance only in the glasshouses and in their immediate vicinity. In these locations it is a major disease

best controlled by salicylanilide. In one experimental glasshouse tetra-methyl-thiuram-disulphide controlled the fungus to approximately the same degree as does salicylanilide but caused hardening of the plants and a reduction in yield.

ROOT KNOT (Heterodera marioni) was prevalent, without causing serious damage in glasshouses on sandy soils; 5% infestation was noted on one crop in sandy soil in the M.I.A. Reports were received from other areas throughout the State but were not as frequent as usual.

SEPTORIA LEAF SPOT (Septoria lycopersici) was of no importance this year, though trace infections were noted in many crops in early December on the North Coast.

BLOSSOM DROP (non-parasitic). Records of unsatisfactory fruit set were obtained from all parts of the State throughout the season. The condition was usually considered to be due to low temperatures and/or excessive rain.

MAGNESIUM DEFICIENCY. Minor symptoms of magnesium deficiency were observed in glasshouses on sandy soils in the Warreiwood-Mona Vale area (M.A.). One late crop showed fairly severe symptoms at Carlingford (M.A.).

VERTICILLIUM WILT (Verticillium dahliae). About 1% loss due to Verticillium Wilt occurred in several glasshouses in the Warriewood-Mona Vale district (M.A.). No other records.

FRUIT ROTS. Rots in the field due to Alternaria solani and Phoma destructiva were practically absent in most crops, though some losses (5-20%) occurred in some properties in Coastal districts. Ripe Rot due to Colletotrichum phomoides, and in one case by an unidentified species of Vermicularia [= Colletotrichum], caused losses in fruit marketed from Coastal districts by individual growers.

RHIZOCTONIA ROOT ROT (Rhizoctonia solani). No record.

BLOSSOM END ROT (Non-parasitic) was observed throughout the State but was of no economic importance.

MOSAIC (Virus). Mosaic was prevalent in glasshouses without causing serious damage. It was also observed in some outdoor crops in the Metropolitan Area without obviously affecting yields.

BIG BUD (Virus) was widely distributed in inland areas but losses were of much lower order than last year. In the Murrumbidgee Irrigation Areas infection rates ranged from 1-2%, At Cowra (C.T.) there was an average of 1%, with individual crops 5 to 10%. In the Burragorang Valley (S.C.) 1% of plants were affected.

SHATTER (Virus). Trace infection by this unidentified virus occurred in the Burragorang Valley (S.C.) in December.

FERNLEAF (Virus). Fernleaf was unimportant. It was reported from Murwillumbah and Bowraville (N.C.) and Fairfield (M.A.).

LATE BLIGHT (Phytophthora infestans). No record.

COLLAR ROT (Phytophthora cryptogea) attacked seedling tomatoes in a glasshouse at Griffith (M.I.A.

BACTERIAL SPECK (Bacterium tomato) was again present in glasshouse seedlings at Leeton (M.I.A.). However, it was less prevalent than in previous seasons, possibly as a result of the seed being subjected to a hot water soak prior to sowing.

PUFFY FRUIT (Non-parasitic). Several instances of puffy fruit, due probably to poor fertilisation, were recorded from the Central Tablelands. The variety Grosse Lisse only was affected.

BACTERIAL WILT (Bacterium solanacearum) was present in one crop on the North Coast.

MOLYBDENUM DEFICIENCY. Three records - from Berkeley Vale (C.C.) Horsley (M.A.) and Wetherill Park (M.A.).

MISCELLANEOUS PLANTS.

ACACIA SP.

SOOTY BLOTCH (Gloeodes pomigena) was recorded on young shoots of native wattle adjacent to a grapefruit orchard at Terrigal (C.C.).

ACACIA FARNESIANA.

RUST (Uromycladium notabile) was recorded for the first time on this host from Moree and Pallamallawa (N.W.P.). Reports from a local officer state that infection was so heavy that large stands of the shrub were killed out.

BLACKBERRY.

RUST (Kuehneola uredinis) was widespread in Coastal districts.

CROWN GALL (Agrobacterium tumiefaciens) was recorded for the first time in N.S.W. on this host from a Metropolitan garden.

BRACKEN. (Pteridium aquilinum).

FERNLEAF MOSAIC (? Virus) was recorded for the first time in N.S.W. from Bathurst (C.T.).

BURR, BATHURST.

ANTHRACNOSE (Colletotrichum xanthii) was fairly widespread in the Merriwa-Coolah (C.T.) and Warialda (N.W.S.) districts. It was also observed at Windsor (M.A.) in May, 1949, where it appeared to have recently invaded the area. It was fairly widespread in the St. Mary's and Penrith (M.A.) districts in April and was seen at Pennant Hills (M.A.). It was not observed at Bathurst, Carcoar (C.T.), Wentworth (W.D.), Young (S.W.S.), Lismore (N.C.), Coonamble (C.W.P.), Armidale (N.T.), Eden (S.C.), Deniliquin, Hay (R.), Kempsey (N.C.), Forbes (C.W.S.). Some plants were affected by a disease in the Jeogla (N.T.) area, seedlings being killed, but the cause was not determined.

BLIGHT (Macrosporium sp.) was recorded at Corowa (R.) in April.

BURR, GALVANISED.

RUST (Puccinia bassiae) was reported to be relatively common at Walgett (C.W.P.) and in other parts of the State during Autumn, killing out numbers of burrs.

DOCK (Rumex obtusifolius).

LEAF SPOT (Ovularia obliqua) was prevalent during late Summer and Autumn.

IPOMOEA PLEBEIA.

WHITE RUST (Cystopus ipomoeae - panduratae) was recorded for the first time in N.S.W. from Carr's Creek (N.C.). It has not so far been observed on sweet potato.

LAMBS TONGUE (Plantago lanceolata).

SCAB (Sphaceloma plantaginis) was recorded for the first time in N.S.W. from a Metropolitan locality.

MALVA.

RUST (Puccinia malvacearum) was common on weeds in Coastal areas throughout the season and in the M.I.A. during Winter, 1949.

MUSTARD, WILD.

LEAF SPOT (Alternaria sp.) was observed causing heavy infection in orchards at Leeton (M.I.A.) during Winter, 1949. Long periods of dew and fogs provided suitable conditions for its spread.

NETTLE (Urtica urens).

LEAF SPOT (Septoria sp.) was recorded on weeds in citrus orchards in the Leeton (M.I.A.) district during Winter, 1948.

NIGHTSHADE (Solanum opacum).

RING SPOT MOSAIC (? Spotted Wilt virus) was recorded for the first time on this host in N.S.W. from Leeton (M.I.A.).

NUT GRASS (Cyperus rotundus).

RUST (Puccinia cyperi) was recorded for the first time in N.S.W. from Boggabilla (N.W.P.).

OXALIS CORNICULATA.

The Aecidial stage of maize Rust (Puccinia sorghi) was observed at Bega (S.C.) and Grafton (N.C.).

PIGWEED (Portulaca oleracea).

WHITE RUST (Cystopus portulacae) was recorded from Leeton and Griffith (M.I.A.) and the Carlingford (M.A.) district during Autumn, 1949.

PLANTAIN (Plantago major).

POWDERY MILDEW (Oidium sp.) was recorded for the first time on this host in N.S.W. from a Metropolitan locality.

SIDA RHOMBIFOLIA.

STEM ROT (Sclerotinia sclerotiorum) caused particularly severe damage to weeds in a citrus orchard at Wiseman's Ferry (M.A.) during late Winter, 1948.

SYNCARPIA LAURIFOLIA.

LEAF BLIGHT (Mycosphaerella sp.) was observed causing very severe injury to young foliage following early Summer rains at Kurrajong Heights and Kuring-gai Chase (M.A.). The sub-glabrous form only of Syncarpia laurifolia was affected. Adjacent tomentose types remained healthy.

THISTLE, MILK (Sonchus oleraceus).

LEAF SPOTS (Alternaria sp. and Septoria sp.) were prevalent during Autumn on weeds in Coastal and M.I.A. orchards.

GREENING (Virus) was recorded from a Metropolitan source.

WIRE WEED (Polygonum aviculare).

RUST (Uromyces polygoni). Severe infection was observed in the Wagga (S.W.S.) district causing almost complete defoliation of plants in some areas.

VERBENA BONARIENSE.

POWDERY MILDEW (Erysiphe cichoracearum). Very heavy infection was observed in Narara (C.C.) district during early Autumn.

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